

SEQUENCE LISTING

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<120> NPC1L1 (NPC3) AND METHODS OF USE THEREOF

<130> JB01603K2 US

<140>

<141> 2003-09-16

<150> 60/397,442

<151> 2002-07-19

<150> 10/621,758

<151> 2003-07-17

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<151> 2003-08-22

<160> 50

<170> PatentIn version 3.1

<210> 1

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<212> DNA

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| gcg gcc cag ggt gag cta tac aca ccc aaa cac gaa gct ggg gtc tgc | 96 |
| Ala Ala Gln Gly Glu Leu Tyr Thr Pro Lys His Glu Ala Gly Val Cys | |
| 20 25 30 | |
| acc ttt tac gaa gag tgc ggg aaa aac cca gag ctc tct gga ggc ctc | 144 |
| Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu | |
| 35 40 45 | |
| acg tca cta tcc aat gta tcc tgc ctg tct aac acc ccg gcc cgc cac | 192 |
| Thr Ser Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg His | |
| 50 55 60 | |
| gtc acg ggt gaa cac ctg gct ctt ctc cag cgc atc tgt ccc cgc ctg | 240 |
| Val Thr Gly Glu His Leu Ala Leu Leu Gln Arg Ile Cys Pro Arg Leu | |
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| Tyr Asn Gly Pro Asn Thr Thr Phe Ala Cys Cys Ser Thr Lys Gln Leu | |
| 85 90 95 | |
| ctg tcc tta gaa agc agc atg tcc atc acc aag gcc ctt ctc acg cgc | 336 |
| Leu Ser Leu Glu Ser Ser Met Ser Ile Thr Lys Ala Leu Leu Thr Arg | |
| 100 105 110 | |
| tgc ccg gcc tgc tct gac aat ttt gtg agc tta cac tgc cac aac act | 384 |
| Cys Pro Ala Cys Ser Asp Asn Phe Val Ser Leu His Cys His Asn Thr | |
| 115 120 125 | |
| tgc agc cct gac cag agc ctc ttc atc aac gtc acc ccg gtg gtt gag | 432 |
| Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Glu | |
| 130 135 140 | |
| cgg ggc gct gga gag cct cct gcc gtg gtg gcc tat gag gcc ttt tat | 480 |
| Arg Gly Ala Gly Glu Pro Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr | |
| 145 150 155 160 | |
| cag cgc agc ttt gct gag aag gcc tat gag tcc tgc agc cag gtg cgc | 528 |
| Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Gln Val Arg | |
| 165 170 175 | |
| atc cct gcg gcc gct tcc ttg gcc gtg ggc agc atg tgt gga gtg tat | 576 |
| Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr | |
| 180 185 190 | |
| ggc tcc gcc ctc tgc aat gct cag cgc tgg ctc aac ttc caa gga gac | 624 |
| Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp | |
| 195 200 205 | |
| aca ggg aat ggc ctg gct ccg ctg gat atc acc ttc cac ctc ttg gag | 672 |
| Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu | |

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| cct ggc cag gcc cta ccg gat ggg atc cag cca ctg aat ggg aag atc Pro Gly Gln Ala Leu Pro Asp Gly Ile Gln Pro Leu Asn Gly Lys Ile 225 230 235 240 | | | 720 |
| gca ccc tgc aac gag tct cag ggt gat gac tca gca gtc tgc tcc tgc Ala Pro Cys Asn Glu Ser Gln Gly Asp Asp Ser Ala Val Cys Ser Cys 245 250 255 | | | 768 |
| cag gac tgt gcg gcg tcc tgc cct gtc atc cct ccg ccc gag gcc ttg Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Glu Ala Leu 260 265 270 | | | 816 |
| cgc cct tcc ttc tac atg ggt cgc atg cca ggc tgg ctg gcc ctc atc Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile 275 280 285 | | | 864 |
| atc atc ttc act gct gtc ttt gtg ttg ctc tct gca gtc ctt gtg cgt Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Ala Val Leu Val Arg 290 295 300 | | | 912 |
| ctc cga gtg gtt tcc aac agg aac aag aac aag gca gaa ggc ccc cag Leu Arg Val Val Ser Asn Arg Asn Lys Asn Lys Ala Glu Gly Pro Gln 305 310 315 320 | | | 960 |
| gaa gcc ccc aaa ctc cct cat aag cac aaa ctc tca ccc cat acc atc Glu Ala Pro Lys Leu Pro His Lys His Lys Leu Ser Pro His Thr Ile 325 330 335 | | | 1008 |
| ctg ggc cgg ttc ttc cag aac tgg ggc aca agg gtg gcc tcg tgg cca Leu Gly Arg Phe Phe Gln Asn Trp Gly Thr Arg Val Ala Ser Trp Pro 340 345 350 | | | 1056 |
| ctc acc gtc tta gca ctg tcc ttc atc gtt gtg ata gcc tta gca gca Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ala Ala 355 360 365 | | | 1104 |
| ggc ctg acc ttt att gaa ctc acc aca gac cct gtg gaa ctg tgg tcg Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser 370 375 380 | | | 1152 |
| gcc ccc aag agc cag gcc cgg aaa gag aag tct ttc cat gat gag cat Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ser Phe His Asp Glu His 385 390 395 400 | | | 1200 |
| ttc ggc ccc ttc ttt cga acc aac cag att ttc gtg aca gct cgg aac Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Arg Asn 405 410 415 | | | 1248 |
| agg tcc agc tac aag tac gac tcc cta ctg cta ggg tcc aag aac ttc Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Ser Lys Asn Phe 420 425 430 | | | 1296 |
| agt ggg atc ctg tcc ctg gac ttc ctg ctg gag ctg ctg gag ctt cag Ser Gly Ile Leu Ser Leu Asp Phe Leu Leu Glu Leu Leu Glu Leu Gln 435 440 445 | | | 1344 |
| gag agg ctt cga cac ctg caa gtg tgg tcc cct gag gca gag cgc aac Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Glu Arg Asn 450 455 460 | | | 1392 |

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|---|------|
| atc tcc ctc cag gac atc tgc tat gcc ccc ctc aac cca tat aac acc Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Tyr Asn Thr 465 470 475 480 | 1440 |
| agc ctc tcc gac tgc tgt gtc aac agc ctc ctt cag tac ttc cag aac Ser Leu Ser Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn 485 490 495 | 1488 |
| aac cgc acc ctc ctg atg ctc acg gcc aac cag act ctg aat ggc cag Asn Arg Thr Leu Leu Met Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln 500 505 510 | 1536 |
| acc tcc ctg gtg gac tgg aag gac cat ttc ctc tac tgt gca aat gcc Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala 515 520 525 | 1584 |
| cct ctc acg ttc aaa gat ggc acg tct ctg gcc ctg agc tgc atg gct Pro Leu Thr Phe Lys Asp Gly Thr Ser Leu Ala Leu Ser Cys Met Ala 530 535 540 | 1632 |
| gac tac ggg gct cct gtc ttc ccc ttc ctt gct gtt ggg gga tac caa Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln 545 550 555 560 | 1680 |
| ggc acg gac tat tcc gag gca gaa gcg ctg atc ata acc ttc tct ctc Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Leu 565 570 575 | 1728 |
| aat aac tac ccc gct gat gat ccc cgc atg gcc cag gcc aag ctc tgg Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala Gln Ala Lys Leu Trp 580 585 590 | 1776 |
| gag gag gct ttc ttg aag gaa atg gaa tcc ttc cag agg aac aca agt Glu Glu Ala Phe Leu Lys Glu Met Glu Ser Phe Gln Arg Asn Thr Ser 595 600 605 | 1824 |
| gac aag ttc cag gtt gcg ttc tca gct gag cgc tct ctg gag gat gag Asp Lys Phe Gln Val Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu 610 615 620 | 1872 |
| atc aac cgc acc acc atc cag gac ctg cct gtc ttt gcc gtc agc tac Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Val Ser Tyr 625 630 635 640 | 1920 |
| att atc gtc ttc ctg tac atc tcc ctg gcc ctg ggc agc tac tcc aga Ile Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg 645 650 655 | 1968 |
| tgc agc cga gta gcg gtg gag tcc aag gct act ctg ggc cta ggt ggg Cys Ser Arg Val Ala Val Glu Ser Lys Ala Thr Leu Gly Leu Gly Gly 660 665 670 | 2016 |
| gtg att gtt gtg ctg gga gca gtt ctg gct gcc atg ggc ttc tac tcc Val Ile Val Val Leu Gly Ala Val Leu Ala Ala Met Gly Phe Tyr Ser 675 680 685 | 2064 |
| tac ctg ggt gtc ccc tct tct ctg gtt atc atc caa gtg gta cct ttc Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe 690 695 700 | 2112 |

| | |
|---|------|
| ctg gtg cta gct gtg gga gct gac aac atc ttc atc ttt gtt ctt gag Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu 705 710 715 720 | 2160 |
| tac cag agg cta cct agg atg cct ggg gaa cag cga gag gct cac att Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile 725 730 735 | 2208 |
| ggc cgc acc ctg ggc agt gtg gcc ccc agc atg ctg ctg tgc agc ctc Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu 740 745 750 | 2256 |
| tct gag gcc atc tgc ttc ttt cta ggg gcc ctg acc ccc atg cca gct Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala 755 760 765 | 2304 |
| gtg agg acc ttc gcc ttg acc tct ggc tta gca att atc ctc gac ttc Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Leu Asp Phe 770 775 780 | 2352 |
| ctg ctc cag atg act gcc ttt gtg gcc ctg ctc tcc ctg gat agc aag Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys 785 790 795 800 | 2400 |
| agg cag gag gcc tct cgc ccg gat gtc tta tgc tgc ttt tca acc cgg Arg Gln Glu Ala Ser Arg Pro Asp Val Leu Cys Cys Phe Ser Thr Arg 805 810 815 | 2448 |
| aag ctg ccc cca cct aaa gaa aaa gaa ggc ctc tta ctc cgc ttc ttc Lys Leu Pro Pro Pro Lys Glu Lys Glu Gly Leu Leu Leu Arg Phe Phe 820 825 830 | 2496 |
| cgc aag ata tac gct cct ttc ctg ctg cac aga ttc atc cgc cct gtt Arg Lys Ile Tyr Ala Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val 835 840 845 | 2544 |
| gtg atg ctg ctg ttt ctg acc ctg ttt gga gca aat ctc tac tta atg Val Met Leu Leu Phe Leu Thr Leu Phe Gly Ala Asn Leu Tyr Leu Met 850 855 860 | 2592 |
| tgc aac atc aac gtg ggg cta gac cag gag ctg gct ctg ccc aag gac Cys Asn Ile Asn Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp 865 870 875 880 | 2640 |
| tcg tac ttg ata gac tac ttc ctc ttt ctg aac cga tac ctt gaa gtg Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val 885 890 895 | 2688 |
| ggg cct cca gtg tac ttt gtc acc acc tcg ggc ttc aac ttc tcc agc Gly Pro Pro Val Tyr Phe Val Thr Thr Ser Gly Phe Asn Phe Ser Ser 900 905 910 | 2736 |
| gag gca ggc atg aac gcc act tgc tct agc gca ggc tgt aag agc ttc Glu Ala Gly Met Asn Ala Thr Cys Ser Ser Ala Gly Cys Lys Ser Phe 915 920 925 | 2784 |
| tcc cta acc cag aaa atc cag tat gcc agt gaa ttc cct gac cag tct Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asp Gln Ser 930 935 940 | 2832 |
| tac gtg gct att gct gca tcc tcc tgg gta gat gac ttc atc gac tgg | 2880 |

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|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------|
| Tyr 945 | Val | Ala | Ile | Ala | Ala | Ser | Ser | Trp | Val | Asp | Asp | Phe | Ile | Asp | Trp | |
| | | | | 950 | | | | | | 955 | | | | | 960 | |
| ctg Leu | acc Thr | ccg Pro | tcc Ser | tcc Ser | tcc Ser | tgc Cys | tgt Cys | cgc Arg | ctt Leu | tat Tyr | ata Ile | cgt Arg | ggc Gly | ccc Pro | cat His | 2928 |
| | | | | 965 | | | | | 970 | | | | | 975 | | |
| aag Lys | gat Asp | gag Glu | ttc Phe | tgt Cys | ccc Pro | tca Ser | acg Thr | gat Asp | act Thr | tcc Ser | ttc Phe | aac Asn | tgc Cys | tta Leu | aaa Lys | 2976 |
| | | | 980 | | | | | 985 | | | | | 990 | | | |
| aac Asn | tgc Cys | atg Met | aac Asn | cgc Arg | act Thr | ctg Leu | ggc Gly | cct Pro | gtg Val | agg Arg | ccc Pro | aca Thr | gcg Ala | gaa Glu | cag Gln | 3024 |
| | | | 995 | | | | 1000 | | | | | 1005 | | | | |
| ttt Phe | cat His | aag Lys | tac Tyr | ctg Leu | ccc Pro | tgg Trp | ttc Phe | ctg Leu | aat Asn | gat Asp | ccg Pro | ccc Pro | aat Asn | atc Ile | | 3069 |
| | 1010 | | | | | 1015 | | | | | 1020 | | | | | |
| aga Arg | tgt Cys | ccc Pro | aaa Lys | ggg Gly | ggc Gly | cta Leu | gca Ala | gcg Ala | tat Tyr | aga Arg | acg Thr | tct Ser | gtg Val | aat Asn | | 3114 |
| | 1025 | | | | | 1030 | | | | | 1035 | | | | | |
| ttg Leu | agc Ser | tca Ser | gat Asp | ggc Gly | cag Gln | gtt Val | ata Ile | gcc Ala | tcc Ser | cag Gln | ttc Phe | atg Met | gcc Ala | tac Tyr | | 3159 |
| | 1040 | | | | | 1045 | | | | | 1050 | | | | | |
| cac His | aag Lys | ccc Pro | tta Leu | agg Arg | aac Asn | tca Ser | cag Gln | gac Asp | ttc Phe | aca Thr | gaa Glu | gct Ala | ctc Leu | cgg Arg | | 3204 |
| | 1055 | | | | | 1060 | | | | | 1065 | | | | | |
| gcg Ala | tcc Ser | cgg Arg | ttg Leu | cta Leu | gca Ala | gcc Ala | aac Asn | atc Ile | aca Thr | gct Ala | gac Asp | cta Leu | cgg Arg | aag Lys | | 3249 |
| | 1070 | | | | | 1075 | | | | | 1080 | | | | | |
| gtg Val | cct Pro | ggg Gly | aca Thr | gat Asp | cca Pro | aac Asn | ttt Phe | gag Glu | gtc Val | ttc Phe | cct Pro | tac Tyr | acg Thr | atc Ile | | 3294 |
| | 1085 | | | | | 1090 | | | | | 1095 | | | | | |
| tcc Ser | aac Asn | gtg Val | ttc Phe | tac Tyr | cag Gln | caa Gln | tac Tyr | ctg Leu | acg Thr | gtc Val | ctt Leu | cct Pro | gag Glu | gga Gly | | 3339 |
| | 1100 | | | | | 1105 | | | | | 1110 | | | | | |
| atc Ile | ttc Phe | acc Thr | ctt Leu | gct Ala | ctt Leu | tgc Cys | ttt Phe | gtg Val | ccc Pro | acc Thr | ttt Phe | gtt Val | gtc Val | tgc Cys | | 3384 |
| | 1115 | | | | | 1120 | | | | | 1125 | | | | | |
| tac Tyr | ctc Leu | cta Leu | ctg Leu | ggc Gly | ctg Leu | gac Asp | atg Met | tgc Cys | tca Ser | ggg Gly | atc Ile | ctc Leu | aac Asn | cta Leu | | 3429 |
| | 1130 | | | | | 1135 | | | | | 1140 | | | | | |
| ctc Leu | tcc Ser | atc Ile | att Ile | atg Met | att Ile | ctc Leu | gtg Val | gac Asp | acc Thr | att Ile | ggc Gly | ctc Leu | atg Met | gct Ala | | 3474 |
| | 1145 | | | | | 1150 | | | | | 1155 | | | | | |
| gtg Val | tgg Trp | ggc Gly | atc Ile | agc Ser | tat Tyr | aat Asn | gcg Ala | gta Val | tcc Ser | ctc Leu | atc Ile | aac Asn | ctt Leu | gtc Val | | 3519 |
| | 1160 | | | | | 1165 | | | | | 1170 | | | | | |
| acg Thr | gca Ala | gtg Val | ggc Gly | atg Met | tct Ser | gtg Val | gag Glu | ttt Phe | gtg Val | tcc Ser | cac His | atc Ile | act Thr | cgg Arg | | 3564 |

| 1175 | 1180 | 1185 | |
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| tcc ttt gct gta agc acc aag cct acc cgg ctg gag agg gct aaa | | | 3609 |
| Ser Phe Ala Val Ser Thr Lys Pro Thr Arg Leu Glu Arg Ala Lys | | | |
| 1190 | 1195 | 1200 | |
| gat gct act gtc ttc atg ggc agt gcg gtg ttt gct gga gtg gcc | | | 3654 |
| Asp Ala Thr Val Phe Met Gly Ser Ala Val Phe Ala Gly Val Ala | | | |
| 1205 | 1210 | 1215 | |
| atg acc aac ttc cca ggc atc ctc atc ttg ggc ttt gcc caa gcc | | | 3699 |
| Met Thr Asn Phe Pro Gly Ile Leu Ile Leu Gly Phe Ala Gln Ala | | | |
| 1220 | 1225 | 1230 | |
| cag ctt att cag atc ttc ttc ttc cgc ctc aac ctt ctg atc acc | | | 3744 |
| Gln Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr | | | |
| 1235 | 1240 | 1245 | |
| ttg ctg ggt ctg ctg cat ggc ctg gtc ttc ctg ccg gtt gtc ctc | | | 3789 |
| Leu Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Val Leu | | | |
| 1250 | 1255 | 1260 | |
| agc tat ctg gga cca gat gtt aac caa gct ctg gta cag gag gag | | | 3834 |
| Ser Tyr Leu Gly Pro Asp Val Asn Gln Ala Leu Val Gln Glu Glu | | | |
| 1265 | 1270 | 1275 | |
| aaa cta gcc agc gag gca gca gtg gcc cca gag cct tct tgc cca | | | 3879 |
| Lys Leu Ala Ser Glu Ala Ala Val Ala Pro Glu Pro Ser Cys Pro | | | |
| 1280 | 1285 | 1290 | |
| cag tac ccc tcc cct gct gat gcg gat gcc aat gtt aac tac ggc | | | 3924 |
| Gln Tyr Pro Ser Pro Ala Asp Ala Asp Ala Asn Val Asn Tyr Gly | | | |
| 1295 | 1300 | 1305 | |
| ttt gcc cca gaa ctt gcc cac gga gct aat gct gct aga agc tct | | | 3969 |
| Phe Ala Pro Glu Leu Ala His Gly Ala Asn Ala Ala Arg Ser Ser | | | |
| 1310 | 1315 | 1320 | |
| ttg ccc aaa agt gac caa aag ttc taa | | | 3996 |
| Leu Pro Lys Ser Asp Gln Lys Phe | | | |
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<212> PRT

<213> Rattus sp.

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| 1 | | | | 5 | | | | 10 | | | | | | 15 | |

| | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Ala | Ala | Gln | Gly | Glu | Leu | Tyr | Thr | Pro | Lys | His | Glu | Ala | Gly | Val | Cys |
| | | 20 | | | | | | 25 | | | | | 30 | | |

Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu
 35 40 45

Thr Ser Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg His
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Val Thr Gly Glu His Leu Ala Leu Leu Gln Arg Ile Cys Pro Arg Leu
 65 70 75 80

Tyr Asn Gly Pro Asn Thr Thr Phe Ala Cys Cys Ser Thr Lys Gln Leu
 85 90 95

Leu Ser Leu Glu Ser Ser Met Ser Ile Thr Lys Ala Leu Leu Thr Arg
 100 105 110

Cys Pro Ala Cys Ser Asp Asn Phe Val Ser Leu His Cys His Asn Thr
 115 120 125

Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Glu
 130 135 140

Arg Gly Ala Gly Glu Pro Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
 145 150 155 160

Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Gln Val Arg
 165 170 175

Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr
 180 185 190

Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
 195 200 205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
 210 215 220

Pro Gly Gln Ala Leu Pro Asp Gly Ile Gln Pro Leu Asn Gly Lys Ile
 225 230 235 240

Ala Pro Cys Asn Glu Ser Gln Gly Asp Asp Ser Ala Val Cys Ser Cys
 245 250 255

Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Glu Ala Leu
 260 265 270

Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile
 275 280 285

Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Ala Val Leu Val Arg
 290 295 300

Leu Arg Val Val Ser Asn Arg Asn Lys Asn Lys Ala Glu Gly Pro Gln
 305 310 315 320

Glu Ala Pro Lys Leu Pro His Lys His Lys Leu Ser Pro His Thr Ile
 325 330 335

Leu Gly Arg Phe Phe Gln Asn Trp Gly Thr Arg Val Ala Ser Trp Pro
 340 345 350

Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ala Ala
 355 360 365

Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
 370 375 380

Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ser Phe His Asp Glu His
 385 390 395 400

Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Arg Asn
 405 410 415

Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Ser Lys Asn Phe
 420 425 430

Ser Gly Ile Leu Ser Leu Asp Phe Leu Leu Glu Leu Leu Glu Leu Gln
 435 440 445

Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Glu Arg Asn
 450 455 460

Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Tyr Asn Thr
 465 470 475 480

Ser Leu Ser Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn
 485 490 495

Asn Arg Thr Leu Leu Met Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln
 500 505 510

Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
 515 520 525

Pro Leu Thr Phe Lys Asp Gly Thr Ser Leu Ala Leu Ser Cys Met Ala
 530 535 540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln
 545 550 555 560

Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Leu
 565 570 575

Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala Gln Ala Lys Leu Trp
 580 585 590

Glu Glu Ala Phe Leu Lys Glu Met Glu Ser Phe Gln Arg Asn Thr Ser
 595 600 605

Asp Lys Phe Gln Val Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu
 610 615 620

Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Val Ser Tyr
 625 630 635 640

Ile Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg
 645 650 655

Cys Ser Arg Val Ala Val Glu Ser Lys Ala Thr Leu Gly Leu Gly Gly
 660 665 670

Val Ile Val Val Leu Gly Ala Val Leu Ala Ala Met Gly Phe Tyr Ser
 675 680 685

Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe
 690 695 700

Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
 705 710 715 720

Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile
 725 730 735

Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu
 740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala

| 755 | | | | | 760 | | | | | 765 | | | | | |
|-----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Val | Arg | Thr | Phe | Ala | Leu | Thr | Ser | Gly | Leu | Ala | Ile | Ile | Leu | Asp | Phe |
| 770 | | | | | | 775 | | | | | 780 | | | | |
| Leu | Leu | Gln | Met | Thr | Ala | Phe | Val | Ala | Leu | Leu | Ser | Leu | Asp | Ser | Lys |
| 785 | | | | | 790 | | | | | 795 | | | | | 800 |
| Arg | Gln | Glu | Ala | Ser | Arg | Pro | Asp | Val | Leu | Cys | Cys | Phe | Ser | Thr | Arg |
| | | | | 805 | | | | | 810 | | | | | 815 | |
| Lys | Leu | Pro | Pro | Pro | Lys | Glu | Lys | Glu | Gly | Leu | Leu | Leu | Arg | Phe | Phe |
| | | | 820 | | | | | 825 | | | | | 830 | | |
| Arg | Lys | Ile | Tyr | Ala | Pro | Phe | Leu | Leu | His | Arg | Phe | Ile | Arg | Pro | Val |
| | | 835 | | | | | 840 | | | | | 845 | | | |
| Val | Met | Leu | Leu | Phe | Leu | Thr | Leu | Phe | Gly | Ala | Asn | Leu | Tyr | Leu | Met |
| | 850 | | | | | 855 | | | | | 860 | | | | |
| Cys | Asn | Ile | Asn | Val | Gly | Leu | Asp | Gln | Glu | Leu | Ala | Leu | Pro | Lys | Asp |
| 865 | | | | | 870 | | | | | 875 | | | | | 880 |
| Ser | Tyr | Leu | Ile | Asp | Tyr | Phe | Leu | Phe | Leu | Asn | Arg | Tyr | Leu | Glu | Val |
| | | | | 885 | | | | | 890 | | | | | 895 | |
| Gly | Pro | Pro | Val | Tyr | Phe | Val | Thr | Thr | Ser | Gly | Phe | Asn | Phe | Ser | Ser |
| | | | 900 | | | | | 905 | | | | | 910 | | |
| Glu | Ala | Gly | Met | Asn | Ala | Thr | Cys | Ser | Ser | Ala | Gly | Cys | Lys | Ser | Phe |
| | | 915 | | | | | 920 | | | | | 925 | | | |
| Ser | Leu | Thr | Gln | Lys | Ile | Gln | Tyr | Ala | Ser | Glu | Phe | Pro | Asp | Gln | Ser |
| | 930 | | | | | 935 | | | | | 940 | | | | |
| Tyr | Val | Ala | Ile | Ala | Ala | Ser | Ser | Trp | Val | Asp | Asp | Phe | Ile | Asp | Trp |
| 945 | | | | | 950 | | | | | 955 | | | | | 960 |
| Leu | Thr | Pro | Ser | Ser | Ser | Cys | Cys | Arg | Leu | Tyr | Ile | Arg | Gly | Pro | His |
| | | | | 965 | | | | | 970 | | | | | 975 | |
| Lys | Asp | Glu | Phe | Cys | Pro | Ser | Thr | Asp | Thr | Ser | Phe | Asn | Cys | Leu | Lys |
| | | | 980 | | | | | 985 | | | | | 990 | | |
| Asn | Cys | Met | Asn | Arg | Thr | Leu | Gly | Pro | Val | Arg | Pro | Thr | Ala | Glu | Gln |
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| | | | | | | | | | | | | | | |
|------|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|
| Phe | His | Lys | Tyr | Leu | Pro | Trp | Phe | Leu | Asn | Asp | Pro | Pro | Asn | Ile |
| 1010 | | | | | | 1015 | | | | | 1020 | | | |
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| Ile | Phe | Thr | Leu | Ala | Leu | Cys | Phe | Val | Pro | Thr | Phe | Val | Val | Cys |
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| Tyr | Leu | Leu | Leu | Gly | Leu | Asp | Met | Cys | Ser | Gly | Ile | Leu | Asn | Leu |
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| Val | Trp | Gly | Ile | Ser | Tyr | Asn | Ala | Val | Ser | Leu | Ile | Asn | Leu | Val |
| 1160 | | | | | | 1165 | | | | | 1170 | | | |
| Thr | Ala | Val | Gly | Met | Ser | Val | Glu | Phe | Val | Ser | His | Ile | Thr | Arg |
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| Ser | Phe | Ala | Val | Ser | Thr | Lys | Pro | Thr | Arg | Leu | Glu | Arg | Ala | Lys |
| 1190 | | | | | | 1195 | | | | | 1200 | | | |
| Asp | Ala | Thr | Val | Phe | Met | Gly | Ser | Ala | Val | Phe | Ala | Gly | Val | Ala |
| 1205 | | | | | | 1210 | | | | | 1215 | | | |
| Met | Thr | Asn | Phe | Pro | Gly | Ile | Leu | Ile | Leu | Gly | Phe | Ala | Gln | Ala |
| 1220 | | | | | | 1225 | | | | | 1230 | | | |

Gln Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr
 1235 1240 1245

Leu Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Val Leu
 1250 1255 1260

Ser Tyr Leu Gly Pro Asp Val Asn Gln Ala Leu Val Gln Glu Glu
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Lys Leu Ala Ser Glu Ala Ala Val Ala Pro Glu Pro Ser Cys Pro
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Gln Tyr Pro Ser Pro Ala Asp Ala Asp Ala Asn Val Asn Tyr Gly
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 Arg Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr
 20 25 30
 tgc gcc ttc tat gac gaa tgt ggg aag aac cca gag ctg tct gga agc 144
 Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser
 35 40 45

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| Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg | |
| 50 55 60 | |
| aag atc aca ggt gat cac ctg atc cta tta cag aag atc tgc ccc cgc | 240 |
| Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg | |
| 65 70 75 80 | |
| ctc tac acc ggc ccc aac acc caa gcc tgc tgc tcc gcc aag cag ctg | 288 |
| Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu | |
| 85 90 95 | |
| gta tca ctg gaa gcg agt ctg tcg atc acc aag gcc ctc ctc acc cgc | 336 |
| Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg | |
| 100 105 110 | |
| tgc cca gcc tgc tct gac aat ttt gtg aac ctg cac tgc cac aac acg | 384 |
| Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr | |
| 115 120 125 | |
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| Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln | |
| 130 135 140 | |
| cta ggg gct gga caa ctc cca gct gtg gtg gcc tat gag gcc ttc tac | 480 |
| Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr | |
| 145 150 155 160 | |
| cag cat agc ttt gcc gag cag agc tat gac tcc tgc agc cgt gtg cgc | 528 |
| Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg | |
| 165 170 175 | |
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| Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr | |
| 180 185 190 | |
| ggc tct gcc ctt tgc aat gcc cag cgc tgg ctc aac ttc cag gga gac | 624 |
| Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp | |
| 195 200 205 | |
| aca ggc aat ggt ctg gcc cca ctg gac atc acc ttc cac ctc ttg gag | 672 |
| Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu | |
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| Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val | |
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| Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys | |
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| Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu | |
| 260 265 270 | |
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| 275 280 285 | |

| | |
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| agc gga atc ctg gac ctg gac ttg ctg ctg gag ctg cta gag ctg cag Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln 435 440 445 | 1344 |
| gag agg ctg cgg cac ctc cag gta tgg tcg ccc gaa gca cag cgc aac Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn 450 455 460 | 1392 |
| atc tcc ctg cag gac atc tgc tac gcc ccc ctc aat ccg gac aat acc Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr 465 470 475 480 | 1440 |
| agt ctc tac gac tgc tgc atc aac agc ctc ctg cag tat ttc cag aac Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn 485 490 495 | 1488 |
| aac cgc acg ctc ctg ctg ctc aca gcc aac cag aca ctg atg ggg cag Asn Arg Thr Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln 500 505 510 | 1536 |
| acc tcc caa gtc gac tgg aag gac cat ttt ctg tac tgt gcc aat gcc Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala 515 520 525 | 1584 |
| ccg ctc acc ttc aag gat ggc aca gcc ctg gcc ctg agc tgc atg gct | 1632 |

| | | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|--|
| Pro | Leu | Thr | Phe | Lys | Asp | Gly | Thr | Ala | Leu | Ala | Leu | Ser | Cys | Met | Ala | | |
| 530 | | | | | | 535 | | | | | 540 | | | | | | |
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| Asp | Tyr | Gly | Ala | Pro | Val | Phe | Pro | Phe | Leu | Ala | Ile | Gly | Gly | Tyr | Lys | | |
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| Gly | Lys | Asp | Tyr | Ser | Glu | Ala | Glu | Ala | Leu | Ile | Met | Thr | Phe | Ser | Leu | | |
| | | | | 565 | | | | | 570 | | | | | 575 | | | |
| aac | aat | tac | cct | gcc | ggg | gac | ccc | cgt | ctg | gcc | cag | gcc | aag | ctg | tgg | 1776 | |
| Asn | Asn | Tyr | Pro | Ala | Gly | Asp | Pro | Arg | Leu | Ala | Gln | Ala | Lys | Leu | Trp | | |
| | | | 580 | | | | | 585 | | | | | 590 | | | | |
| gag | gag | gcc | ttc | tta | gag | gaa | atg | cga | gcc | ttc | cag | cgt | cgg | atg | gct | 1824 | |
| Glu | Glu | Ala | Phe | Leu | Glu | Glu | Met | Arg | Ala | Phe | Gln | Arg | Arg | Met | Ala | | |
| | | 595 | | | | | 600 | | | | | 605 | | | | | |
| ggc | atg | ttc | cag | gtc | acg | ttc | acg | gct | gag | cgc | tct | ctg | gaa | gac | gag | 1872 | |
| Gly | Met | Phe | Gln | Val | Thr | Phe | Thr | Ala | Glu | Arg | Ser | Leu | Glu | Asp | Glu | | |
| | 610 | | | | | 615 | | | | | 620 | | | | | | |
| atc | aat | cgc | acc | aca | gct | gaa | gac | ctg | ccc | atc | ttt | gcc | acc | agc | tac | 1920 | |
| Ile | Asn | Arg | Thr | Thr | Ala | Glu | Asp | Leu | Pro | Ile | Phe | Ala | Thr | Ser | Tyr | | |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 | | |
| att | gtc | ata | ttc | ctg | tac | atc | tct | ctg | gcc | ctg | ggc | agc | tat | tcc | agc | 1968 | |
| Ile | Val | Ile | Phe | Leu | Tyr | Ile | Ser | Leu | Ala | Leu | Gly | Ser | Tyr | Ser | Ser | | |
| | | | | 645 | | | | | 650 | | | | | 655 | | | |
| tgg | agc | cga | gtg | atg | gtg | gac | tcc | aag | gcc | acg | ctg | ggc | ctc | ggc | ggg | 2016 | |
| Trp | Ser | Arg | Val | Met | Val | Asp | Ser | Lys | Ala | Thr | Leu | Gly | Leu | Gly | Gly | | |
| | | | 660 | | | | | 665 | | | | | 670 | | | | |
| gtg | gcc | gtg | gtc | ctg | gga | gca | gtc | atg | gct | gcc | atg | ggc | ttc | ttc | tcc | 2064 | |
| Val | Ala | Val | Val | Leu | Gly | Ala | Val | Met | Ala | Ala | Met | Gly | Phe | Phe | Ser | | |
| | | 675 | | | | | 680 | | | | | 685 | | | | | |
| tac | ttg | ggt | atc | cgc | tcc | tcc | ctg | gtc | atc | ctg | caa | gtg | gtt | cct | ttc | 2112 | |
| Tyr | Leu | Gly | Ile | Arg | Ser | Ser | Leu | Val | Ile | Leu | Gln | Val | Val | Pro | Phe | | |
| | 690 | | | | | 695 | | | | | 700 | | | | | | |
| ctg | gtg | ctg | tcc | gtg | ggg | gct | gat | aac | atc | ttc | atc | ttt | gtt | ctc | gag | 2160 | |
| Leu | Val | Leu | Ser | Val | Gly | Ala | Asp | Asn | Ile | Phe | Ile | Phe | Val | Leu | Glu | | |
| 705 | | | | | 710 | | | | | 715 | | | | | 720 | | |
| tac | cag | agg | ctg | ccc | cgg | agg | cct | ggg | gag | cca | cga | gag | gtc | cac | att | 2208 | |
| Tyr | Gln | Arg | Leu | Pro | Arg | Arg | Pro | Gly | Glu | Pro | Arg | Glu | Val | His | Ile | | |
| | | | | 725 | | | | | 730 | | | | | 735 | | | |
| ggg | cga | gcc | cta | ggc | agg | gtg | gct | ccc | agc | atg | ctg | ttg | tgc | agc | ctc | 2256 | |
| Gly | Arg | Ala | Leu | Gly | Arg | Val | Ala | Pro | Ser | Met | Leu | Leu | Cys | Ser | Leu | | |
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| tct | gag | gcc | atc | tgc | ttc | ttc | cta | ggg | gcc | ctg | acc | ccc | atg | cca | gct | 2304 | |
| Ser | Glu | Ala | Ile | Cys | Phe | Phe | Leu | Gly | Ala | Leu | Thr | Pro | Met | Pro | Ala | | |
| | | 755 | | | | | 760 | | | | | 765 | | | | | |
| gtg | cgg | acc | ttt | gcc | ctg | acc | tct | ggc | ctt | gca | gtg | atc | ctt | gac | ttc | 2352 | |
| Val | Arg | Thr | Phe | Ala | Leu | Thr | Ser | Gly | Leu | Ala | Val | Ile | Leu | Asp | Phe | | |

| 770 | 775 | 780 | |
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| agg cag gag gcc tcc cgg ttg gac gtc tgc tgc tgt gtc aag ccc cag Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln 805 810 815 | | | 2448 |
| gag ctg ccc ccg cct ggc cag gga gag ggg ctc ctg ctt ggc ttc ttc Glu Leu Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe 820 825 830 | | | 2496 |
| caa aag gct tat gcc ccc ttc ctg ctg cac tgg atc act cga ggt gtt Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val 835 840 845 | | | 2544 |
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| tgc atg agc atc acg atg ggc tct gtg agg ccc tcg gtg gag cag ttc Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe 995 1000 1005 | | | 3024 |
| cat aag tat ctt ccc tgg ttc ctg aac gac cgg ccc aac atc aaa His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys 1010 1015 1020 | | | 3069 |

| | | | | |
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| Cys Pro | Lys Gly Gly Leu Ala | Ala Tyr Ser Thr Ser | Val Asn Leu | |
| 1025 | 1030 | 1035 | | |
| act tca | gat ggc cag gtt tta | gcc tcc agg ttc atg | gcc tat cac | 3159 |
| Thr Ser | Asp Gly Gln Val Leu | Ala Ser Arg Phe Met | Ala Tyr His | |
| 1040 | 1045 | 1050 | | |
| aag ccc | ctg aaa aac tca cag | gat tac aca gaa gct | ctg cgg gca | 3204 |
| Lys Pro | Leu Lys Asn Ser Gln | Asp Tyr Thr Glu Ala | Leu Arg Ala | |
| 1055 | 1060 | 1065 | | |
| gct cga | gag ctg gca gcc aac | atc act gct gac ctg | cgg aaa gtg | 3249 |
| Ala Arg | Glu Leu Ala Ala Asn | Ile Thr Ala Asp Leu | Arg Lys Val | |
| 1070 | 1075 | 1080 | | |
| cct gga | aca gac ccg gct ttt | gag gtc ttc ccc tac | acg atc acc | 3294 |
| Pro Gly | Thr Asp Pro Ala Phe | Glu Val Phe Pro Tyr | Thr Ile Thr | |
| 1085 | 1090 | 1095 | | |
| aat gtg | ttt tat gag cag tac | ctg acc atc ctc cct | gag ggg ctc | 3339 |
| Asn Val | Phe Tyr Glu Gln Tyr | Leu Thr Ile Leu Pro | Glu Gly Leu | |
| 1100 | 1105 | 1110 | | |
| ttc atg | ctc agc ctc tgc ctt | gtg ccc acc ttc gct | gtc tcc tgc | 3384 |
| Phe Met | Leu Ser Leu Cys Leu | Val Pro Thr Phe Ala | Val Ser Cys | |
| 1115 | 1120 | 1125 | | |
| ctc ctg | ctg ggc ctg gac ctg | cgc tcc ggc ctc ctc | aac ctg ctc | 3429 |
| Leu Leu | Leu Gly Leu Asp Leu | Arg Ser Gly Leu Leu | Asn Leu Leu | |
| 1130 | 1135 | 1140 | | |
| tcc att | gtc atg atc ctc gtg | gac act gtc ggc ttc | atg gcc ctg | 3474 |
| Ser Ile | Val Met Ile Leu Val | Asp Thr Val Gly Phe | Met Ala Leu | |
| 1145 | 1150 | 1155 | | |
| tgg gac | atc agt tac aat gct | gtg tcc ctc atc aac | ctg gtc tcg | 3519 |
| Trp Asp | Ile Ser Tyr Asn Ala | Val Ser Leu Ile Asn | Leu Val Ser | |
| 1160 | 1165 | 1170 | | |
| gcg gtg | ggc atg tct gtg gag | ttt gtg tcc cac att | acc cgc tcc | 3564 |
| Ala Val | Gly Met Ser Val Glu | Phe Val Ser His Ile | Thr Arg Ser | |
| 1175 | 1180 | 1185 | | |
| ttt gcc | atc agc acc aag ccc | acc tgg ctg gag agg | gcc aaa gag | 3609 |
| Phe Ala | Ile Ser Thr Lys Pro | Thr Trp Leu Glu Arg | Ala Lys Glu | |
| 1190 | 1195 | 1200 | | |
| gcc acc | atc tct atg gga agt | gcg gtg ttt gca ggt | gtg gcc atg | 3654 |
| Ala Thr | Ile Ser Met Gly Ser | Ala Val Phe Ala Gly | Val Ala Met | |
| 1205 | 1210 | 1215 | | |
| acc aac | ctg cct ggc atc ctt | gtc ctg ggc ctc gcc | aag gcc cag | 3699 |
| Thr Asn | Leu Pro Gly Ile Leu | Val Leu Gly Leu Ala | Lys Ala Gln | |
| 1220 | 1225 | 1230 | | |
| ctc att | cag atc ttc ttc ttc | cgc ctc aac ctc ctg | atc act ctg | 3744 |
| Leu Ile | Gln Ile Phe Phe Phe | Arg Leu Asn Leu Leu | Ile Thr Leu | |
| 1235 | 1240 | 1245 | | |

Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
 100 105 110

Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr
 115 120 125

Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln
 130 135 140

Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
 145 150 155 160

Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg
 165 170 175

Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr
 180 185 190

Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
 195 200 205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
 210 215 220

Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val
 225 230 235 240

Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys
 245 250 255

Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu
 260 265 270

Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile
 275 280 285

Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly
 290 295 300

Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys
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Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu
 325 330 335

Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro

| 340 | 345 | 350 |
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| Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala 355 360 365 | | |
| Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser 370 375 380 | | |
| Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His 385 390 395 400 | | |
| Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn 405 410 415 | | |
| Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe 420 425 430 | | |
| Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln 435 440 445 | | |
| Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn 450 455 460 | | |
| Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr 465 470 475 480 | | |
| Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn 485 490 495 | | |
| Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln 500 505 510 | | |
| Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala 515 520 525 | | |
| Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala 530 535 540 | | |
| Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys 545 550 555 560 | | |
| Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu 565 570 575 | | |
| Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp 580 585 590 | | |

Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala
 595 600 605

Gly Met Phe Gln Val Thr Phe Thr Ala Glu Arg Ser Leu Glu Asp Glu
 610 615 620

Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr
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Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser
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Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
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Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser
 675 680 685

Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe
 690 695 700

Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
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Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile
 725 730 735

Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu
 740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
 755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe
 770 775 780

Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
 785 790 795 800

Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln
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Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe
 820 825 830

Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val
 835 840 845
 Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met
 850 855 860
 Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
 865 870 875 880
 Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val
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 Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser
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 Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe
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 Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser
 930 935 940
 Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
 945 950 955 960
 Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys
 965 970 975
 Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn
 980 985 990
 Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe
 995 1000 1005
 His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys
 1010 1015 1020
 Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu
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 Thr Ser Asp Gly Gln Val Leu Ala Ser Arg Phe Met Ala Tyr His
 1040 1045 1050
 Lys Pro Leu Lys Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala
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Ala Arg Glu Leu Ala Ala Asn Ile Thr Ala Asp Leu Arg Lys Val
 1070 1075 1080

Pro Gly Thr Asp Pro Ala Phe Glu Val Phe Pro Tyr Thr Ile Thr
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Asn Val Phe Tyr Glu Gln Tyr Leu Thr Ile Leu Pro Glu Gly Leu
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Phe Met Leu Ser Leu Cys Leu Val Pro Thr Phe Ala Val Ser Cys
 1115 1120 1125

Leu Leu Leu Gly Leu Asp Leu Arg Ser Gly Leu Leu Asn Leu Leu
 1130 1135 1140

Ser Ile Val Met Ile Leu Val Asp Thr Val Gly Phe Met Ala Leu
 1145 1150 1155

Trp Asp Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val Ser
 1160 1165 1170

Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg Ser
 1175 1180 1185

Phe Ala Ile Ser Thr Lys Pro Thr Trp Leu Glu Arg Ala Lys Glu
 1190 1195 1200

Ala Thr Ile Ser Met Gly Ser Ala Val Phe Ala Gly Val Ala Met
 1205 1210 1215

Thr Asn Leu Pro Gly Ile Leu Val Leu Gly Leu Ala Lys Ala Gln
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Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr Leu
 1235 1240 1245

Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Ile Leu Ser
 1250 1255 1260

Tyr Val Gly Pro Asp Val Asn Pro Ala Leu Ala Leu Glu Gln Lys
 1265 1270 1275

Arg Ala Glu Glu Ala Val Ala Ala Val Met Val Ala Ser Cys Pro
 1280 1285 1290

Asn His Pro Ser Arg Val Ser Thr Ala Asp Asn Ile Tyr Val Asn

| | | | | |
|---|--|------|--|------|
| 1295 | | 1300 | | 1305 |
| His Ser Phe Glu Gly Ser Ile Lys Gly Ala Gly Ala Ile Ser Asn | | | | |
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<210> 5

<211> 885

<212> DNA

<213> Rattus sp.

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| gcctccttca gtacttccag aacaaccgca cctcctgat gctcacggcc aaccagactc | 180 |
| tgaatggcca gacctccctg gtggactgga aggaccatct cctctactgt gcaaatgccc | 240 |
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| ctgtcttccc ctctcttgct gttgggggat accaaggcac ggactattcc gaggcagaag | 360 |
| cgctgatcat aaccttctct ctcaataact accccgctga tgatccccgc atggcccagg | 420 |
| ccaagctctg ggaggaggct ttcttgaagg aaatggaatc cttccagagg aacacaagtg | 480 |
| acaagtcca ggttgcgttc tcagctgagc gctctctgga ggatgagatc aaccgcacca | 540 |
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| tggccctggg cagctactcc agatgcagcc gagtagcggg ggagtccaag gctactctgg | 660 |
| gcctagggtg ggtgatagtg tgctgggagc agttctgggt tgcattggggc ttctaactcc | 720 |
| tacctgggtg tcccccttc tctgggtatc atccaagtgg tacctttcct ggtgcttaag | 780 |
| ctgtgggagc tggacacatc tacatcctag acttgagtac cagaggtacc taggaagccg | 840 |
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<211> 458

<212> DNA

<213> Rattus sp.

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acggcctttgc ccagaactt gccacaggag ctaatgctgc tagaagctct ttgccccaaa 180
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<210> 7

<211> 896

<212> DNA

<213> Rattus sp.

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<210> 8

<211> 3124

<212> DNA

<213> Rattus sp.

<400> 8

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| tccagaacaa ccgcaccctc ctgatgctca cggccaacca gactctgaat ggccagacct | 180 |
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| aggctttctt gaaggaaatg gaatccttcc agaggaacac aagtgacaag ttccaggttg | 480 |
| cgttctcagc tgagcgctct ctggaggatg agatcaaccg caccaccatc caggacctgc | 540 |
| ctgtctttgc cgtcagctac attatcgtct tcctgtacat ctccctggcc ctgggcagct | 600 |
| actccagatg cagccgagta gcggtggagt ccaaggctac tctgggccta ggtggggtga | 660 |
| ttgttgtgct gggagcagtt ctggctgcc a tgggcttcta ctctacctg ggtgtccct | 720 |
| cttctctgggt tatcatccaa gtggtacctt tcctggtgct agctgtggga gctgacaaca | 780 |
| tcttcatctt tgttcttgag taccagaggc tacctaggat gcctggggaa cagcgagagg | 840 |
| ctcacattgg ccgcaccctg ggcagtgtgg cccccagcat gctgctgtgc agcctctctg | 900 |
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| tgacctctgg cttagcaatt atcctcgact tcctgctcca gatgactgcc tttgtggccc | 1020 |
| tgctctccct ggatagcaag aggcaggagg cctctcgcgc ggatgtctta tgctgctttt | 1080 |
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| | | |
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| gcatagaaccg cactctgggt cctgtgaggc | ccacagcgga acagtttcat aagtacctgc | 1680 |
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| acaagccctt aaggaaactca caggacttca | cagaagctct ccgggcgtcc cggttgctag | 1860 |
| cagccaacat cacagctgac ctacggaagg | tgcctgggac agatccaaac tttgaggtct | 1920 |
| tcccttacac gatctccaac gtgttctacc | agcaatacct gacggtcctt cctgagggaa | 1980 |
| tcttcaccct tgctctttgc tttgtgcca | cctttgttgt ctgtacctc ctactgggcc | 2040 |
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| ttggcctcat ggctgtgtgg ggtatcagct | ataatgcggt atccctcatc aaccttgtca | 2160 |
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<211> 4484

<212> DNA

<213> Rattus sp.

<400> 9

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| | | | | | | |
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| ctggaggatg | agatcaaccg | caccaccatc | caggacctgc | ctgtctttgc | cgtcagctac | 1920 |
| attatcgtct | tcctgtacat | ctccctggcc | ctgggcagct | actccagatg | cagccgagta | 1980 |
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| ctgcacagat | tcatccgccc | tgttgtgatg | ctgctgtttc | tgaccctgtt | tggagcaaatt | 2580 |
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| tcgtacttga | tagactactt | cctctttctg | aaccgatacc | ttgaagtggg | gcctccagtg | 2700 |
| tactttgtca | ccacctgggg | cttcaacttc | tccagcgagg | caggcatgaa | cgccacttgc | 2760 |
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| tgtccctcaa | cggatacttc | cttcaactgc | ttaaaaaact | gcatgaaccg | cactctgggt | 3000 |
| cctgtgaggg | ccacagcgga | acagtttcat | aagtacctgc | cctgggtcct | gaatgatccg | 3060 |
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| tcagatggcc | aggttatagc | ctcccagttc | atggcctacc | acaagccctt | aaggaactca | 3180 |
| caggacttca | cagaagctct | ccgggcgtcc | cggttgctag | cagccaacat | cacagctgac | 3240 |
| ctacggaagg | tgccctgggac | agatccaaac | tttgaggctt | tccttacac | gatctccaac | 3300 |
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| | |
|--|------|
| ctcaacctac tctccatcat tatgattctc gtggacacca ttggcctcat ggctgtgtgg | 3480 |
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| agggctaaaag atgctactgt cttcatgggc agtgcggtgt ttgctggagt ggccatgacc | 3660 |
| aacttcccag gcatcctcat cttgggcttt gcccaagccc agcttattca gatcttcttc | 3720 |
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| agaagctctt tgcccaaaag tgaccaaaag ttctaattga gtaggagctt gtccatgctt | 4020 |
| cttgctgatg agggatcatg aaggctcttc ctctggttgt cctcaaggcc tggggggagg | 4080 |
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| acctccttgc tctcataggt ccctaaggcc ttggtcagat tacctcctcc atggagagac | 4200 |
| tatcttaagt atcttaagta tcgtatggga tgcacgcct gtcaattaaa aaggctatgg | 4260 |
| cctatggctc aggcagggcc atccggaaga agagaggatt ctgggataaa gccagggtggg | 4320 |
| agattcgcct ggggaaaatg tgacaatggt tcctgagcat gggcaatcag ccatgtggca | 4380 |
| gaatgtaaat taatataaat gggttgtctt aagttatgat tctagctggg gaggagccta | 4440 |
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<210> 10

<211> 3993

<212> DNA

<213> Rattus sp.

<400> 10

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| garytnntaya cncncaarca ygargcnggn gtntgyacnt tytaygarga rtgyggnaar | 120 |
| aayccngary tnwsnggngg nytnacnwsn ytnwsnaayg tnwsntggyt nwsnaayacn | 180 |
| ccngcnmgnc aygtnacngg ngarcayytn gcnytnytn armgnathtg yccnmngnytn | 240 |
| tayaayggnc cnaayacnac nttygcntgy tgywsnacna arcarytnyt nwsnytngar | 300 |
| wsnwsnatgw snathacnaa rgcnynytn acnmngntgyc cngcntgyws ngayaaytty | 360 |

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|-------------|---------------|------------|-------------|-------------|---------------|------|
| gtnwsnytn | c aytgycayaa | yacntgywsn | ccngaycarw | snytnnttyat | haaygtnacn | 420 |
| mgngtngtng | armgngggngc | ngnggarccn | ccngcngtng | tngcntayga | rgcnttytay | 480 |
| carmgnwsnt | tygcngaraa | rgcntaygar | wsntgywsnc | argtnmgnt | hccngcngcn | 540 |
| gcnwsnytn | cngtnggnws | natgtgyggn | gtntayggngw | sngcnyntg | yaaygcncar | 600 |
| mgntggnyt | na ayttycargg | ngayacnggn | aayggnytn | cnccnytn | ga yathacntty | 660 |
| cayytnytng | arccnggnca | rgcnytnccn | gayggcnath | arccnytna | ayggnaarath | 720 |
| gcncntgya | aygarwsnca | rggngaygay | wsngcngtnt | gywsntgyca | rgaytgygcn | 780 |
| gcnwsntgy | cngtnathcc | nccnccngar | gcnytnmgnc | cnwsnttyta | yatgggnmg | 840 |
| atgccngnt | ggytngcny | tathathath | ttayacngcng | tnnttygtny | tnwsngcng | 900 |
| gtnytngtn | gnytnmgnt | ngtnwsnaay | mgnaayaara | ayaargcnga | rggnccncar | 960 |
| gargcnccna | arytnccnca | yaarcayaar | ytnwsnccnc | ayacnathyt | nggnmgntty | 1020 |
| ttycaraayt | gggnacnm | ngtngcnwsn | tggcnnytna | cngtnytngc | nytnwsntty | 1080 |
| athgtngtna | thgcnytngc | ngcnggnytn | acnttyathg | arytnacnac | ngayccngtn | 1140 |
| garytnntggw | sngcnccnaa | rwsncargcn | mgnaargara | arwsnttyca | ygaygarca | 1200 |
| tyggncnt | tyttymgnac | naaycarath | tygtnacng | cnmgnaaymg | nwsnwsntay | 1260 |
| aartaygayw | snytnytnyt | nggnwsnaar | aayttywng | gnathytnws | nytngayty | 1320 |
| ytnytngary | tnytngaryt | ncargarmgn | ytnmgncayy | tncargtntg | gwsnccngar | 1380 |
| gcngarmgna | ayathwsnyt | ncargayath | tgytaygcnc | cnytnaaycc | ntayaayacn | 1440 |
| wsnytnwsng | aytgytgygt | naaywsnytn | ytncartayt | tycaraayaa | ymgnacnytn | 1500 |
| ytnatgytna | cngcnaayca | racnytnaay | ggncaracnw | snytnngtna | ytggaargay | 1560 |
| cayttyynt | aytgygcnaa | ygcncnytn | acnttyaarg | ayggnacnws | nytnngcnytn | 1620 |
| wsntgyatgg | cngaytaygg | ngcncngtn | ttycnttyy | tngcngtngg | nggntaycar | 1680 |
| ggnacngayt | aywsngargc | ngargcnytn | athathacnt | tywsnytna | yaaytayccn | 1740 |
| gcngaygayc | cnmgntggc | ncargcnaar | ytnngggarg | argcnttyyt | naargaratg | 1800 |
| garwsnttyc | armgnaayac | nwsngayaar | ttycargtng | cnttywsngc | ngarmgnwsn | 1860 |
| ytnngargayg | arathaaymg | nacnacnath | cargayytnc | cngtnnttygc | ngtnwsntay | 1920 |
| athathgtnt | tyyntayay | hwsnytnngc | ytnngnwsnt | aywsnmngtg | ywsnmngtn | 1980 |
| gcngtngarw | snaargcnac | nytnngnytn | ggngngtngna | thgtngtnyt | nggngcngtn | 2040 |
| ytnngcngcna | tgggnttyta | ywsntayytn | ggngtnccnw | snwsnytngt | nathathcar | 2100 |
| gtngtnccnt | tyyntngtnyt | ngcngtnggn | gcngayaaya | thtatyathtt | ygtnytngar | 2160 |

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|--|------|
| taycarmgny tncnmgntat gccngngngar carmgngarg cncayathgg nmgnacnytn | 2220 |
| ggngwsngtng cncnwsnat gytnytnngy wsnytnwsng argcnathtg ytttyttytn | 2280 |
| ggngcnynatna cncnngatgcc ngngngtngmgn acnttygcny tnacnwsngg nytngcnath | 2340 |
| athytngayt tyytnytnca ratgacngcn ttygtngcny tnytnwsnyt ngaywsnaar | 2400 |
| mgncargarg cnwsnmgncc ngaygtnytn tgytgyttyw snacnmgnaa rytncnccn | 2460 |
| ccnaargara argarggnyt nytnytnmgn ttytymgna arathtaygc ncnnttytn | 2520 |
| ytncaymgnt tyathmgnc ngtnngtnatg ytnytnntty tnacnytnntt yggngcnaay | 2580 |
| ytnataytna tgtgyaayat haaygtnggn ytngaycarg arytnngcnyt nccnaargay | 2640 |
| wsntaytna thgaytaytt yytnnttytn aaymgntayy tngargtngg nccncngtn | 2700 |
| tayttygtna cnacnwsngg nttyaaytyt wsnwsngarg cnggnatgaa ygcnaentgy | 2760 |
| wsnwsngcng gntgyaarws nttywsnytn acncaraara thcartaygc nwsngartty | 2820 |
| ccngaycarw sntaygtngc nathgcngcn wsnwsntggg tngaygaytt yathgaytgg | 2880 |
| ytnacnccnw snwsnwsntg ytgymgnytn tayathmgng gncncayaa rgaygartty | 2940 |
| tgyccnwsna cngayacnws nttyaaytyt ytnaaraayt gyatgaaymg nacnytnngn | 3000 |
| ccngtnmgnc cnacngnga rcarttycay aartaytn cngtggttyt naaygayccn | 3060 |
| ccnaayathm gntgyccnaa rggnggnytn gcngcntaym gnacnwsngt naaytnwsn | 3120 |
| wsngayggnc argtnathgc nwsncartty atggcntayc ayaarccnyt nmgnaywsn | 3180 |
| cargayttya cngargcnyt nmngcnwsn mgnytnytn cngcnaayat hacngcngay | 3240 |
| ytnmgnaarg tncnngnac ngayccnaay ttygargtnt tyccntayac nathwsnaay | 3300 |
| gtnttytayc arcartayyt nacngtnytn ccngarggna thttyacnyt ngcnytnngy | 3360 |
| ttygtncna cnttygtngt ntgytaytn ytnytnngny tngayatgtg ywsnggnath | 3420 |
| ytnaaytny tnwsnathat hatgathytn gtngayacna thggnytnat ggcngntngg | 3480 |
| ggngnathwsnt ayaaycngt nwsnytnath aaytnngtna cngcngtngg natgwsngtn | 3540 |
| garttygtnw snayathac nmgnwsntty gcngtnwsna cnaarccnac nmgnytngar | 3600 |
| mgngcnaarg aygcnaent nttyatgggn wsngcngtnt tygcngngt ngcnatgacn | 3660 |
| aayttyccng gnathytnat hytnngntty gcncargcnc arytnathca rathttytyt | 3720 |
| ttymgnytna ayytnytnat hacnytnytn ggnytnytn ayggnytngt nttytnccn | 3780 |
| gtngtnytnw sntaytnngg nccngaygt aaycargcny tngtncarga rgaraarytn | 3840 |
| gcnwsngarg cngcngtngc nccngarccn wsntgyccnc artayccnws nccngcngay | 3900 |
| gcngaygcna aygtnaayta yggnttygc cngarytn cncayggngc naaygcngcn | 3960 |
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<211> 4002

<212> DNA

<213> Mus sp.

<220>

<221> CDS

<222> (1)..(4002)

<223>

<400> 11

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| Met Ala Ala Ala Trp Gln Gly Trp Leu Leu Trp Ala Leu Leu Leu Asn | |
| 1 5 10 15 | |

| | |
|---|----|
| tcg gcc cag ggt gag ctc tac aca ccc act cac aaa gct ggc ttc tgc | 96 |
| Ser Ala Gln Gly Glu Leu Tyr Thr Pro Thr His Lys Ala Gly Phe Cys | |
| 20 25 30 | |

| | |
|---|-----|
| acc ttt tat gaa gag tgt ggg aag aac cca gag ctt tct gga ggc ctc | 144 |
| Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu | |
| 35 40 45 | |

| | |
|---|-----|
| aca tca cta tcc aat atc tcc tgc ttg tct aat acc cca gcc cgc cat | 192 |
| Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His | |
| 50 55 60 | |

| | |
|---|-----|
| gtc aca ggt gac cac ctg gct ctt ctc cag cgc gtc tgt ccc cgc cta | 240 |
| Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu | |
| 65 70 75 80 | |

| | |
|---|-----|
| tac aat ggc ccc aat gac acc tat gcc tgt tgc tct acc aag cag ctg | 288 |
| Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu | |
| 85 90 95 | |

| | |
|---|-----|
| gtg tca tta gac agt agc ctg tct atc acc aag gcc ctc ctt aca cgc | 336 |
| Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg | |
| 100 105 110 | |

| | |
|---|-----|
| tgc ccg gca tgc tct gaa aat ttt gtg agc ata cac tgt cat aat acc | 384 |
| Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr | |
| 115 120 125 | |

| | |
|---|-----|
| tgc agc cct gac cag agc ctc ttc atc aat gtt act cgc gtg gtt cag | 432 |
| Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln | |
| 130 135 140 | |

| | |
|---|-----|
| cgg gac cct gga cag ctt cct gct gtg gtg gcc tat gag gcc ttt tat | 480 |
| Arg Asp Pro Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr | |

| 145 | 150 | 155 | 160 | |
|---|-----|-----|-----|------|
| caa cgc agt ttt gca gag aag gcc tat gag tcc tgt agc cgg gtg cgc | | | | 528 |
| Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg | | | | |
| | 165 | 170 | 175 | |
| atc cct gca gct gcc tcg ctg gct gtg ggc agc atg tgt gga gtg tat | | | | 576 |
| Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr | | | | |
| | 180 | 185 | 190 | |
| ggc tct gcc ctc tgc aat gct cag cgc tgg ctc aac ttc caa gga gac | | | | 624 |
| Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp | | | | |
| | 195 | 200 | 205 | |
| aca ggg aat ggc ctg gct ccg ctg gac atc acc ttc cac ctc ttg gag | | | | 672 |
| Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu | | | | |
| | 210 | 215 | 220 | |
| cct ggc cag gcc ctg gca gat ggg atg aag cca ctg gat ggg aag atc | | | | 720 |
| Pro Gly Gln Ala Leu Ala Asp Gly Met Lys Pro Leu Asp Gly Lys Ile | | | | |
| | 225 | 230 | 235 | 240 |
| aca ccc tgc aat gag tcc cag ggt gaa gac tcg gca gcc tgt tcc tgc | | | | 768 |
| Thr Pro Cys Asn Glu Ser Gln Gly Glu Asp Ser Ala Ala Cys Ser Cys | | | | |
| | 245 | 250 | 255 | |
| cag gac tgt gca gca tcc tgc cct gtc atc cct ccg ccc ccg gcc ctg | | | | 816 |
| Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Ala Leu | | | | |
| | 260 | 265 | 270 | |
| cgc cct tct ttc tac atg ggt cga atg cca ggc tgg ctg gct ctc atc | | | | 864 |
| Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile | | | | |
| | 275 | 280 | 285 | |
| atc atc ttc act gct gtc ttt gta ttg ctc tct gtt gtc ctt gtg tat | | | | 912 |
| Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Val Val Leu Val Tyr | | | | |
| | 290 | 295 | 300 | |
| ctc cga gtg gct tcc aac agg aac aag aac aag aca gca ggc tcc cag | | | | 960 |
| Leu Arg Val Ala Ser Asn Arg Asn Lys Asn Lys Thr Ala Gly Ser Gln | | | | |
| | 305 | 310 | 315 | 320 |
| gaa gcc ccc aac ctc cct cgt aag cgc aga ttc tca cct cac act gtc | | | | 1008 |
| Glu Ala Pro Asn Leu Pro Arg Lys Arg Arg Phe Ser Pro His Thr Val | | | | |
| | 325 | 330 | 335 | |
| ctt ggc cgg ttc ttc gag agc tgg gga aca agg gtg gcc tca tgg cca | | | | 1056 |
| Leu Gly Arg Phe Phe Glu Ser Trp Gly Thr Arg Val Ala Ser Trp Pro | | | | |
| | 340 | 345 | 350 | |
| ctc act gtc ttg gca ctg tcc ttc ata gtt gtg ata gcc ttg tca gta | | | | 1104 |
| Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ser Val | | | | |
| | 355 | 360 | 365 | |
| ggc ctg acc ttt ata gaa ctc acc aca gac cct gtg gaa ctg tgg tcg | | | | 1152 |
| Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser | | | | |
| | 370 | 375 | 380 | |
| gcc cct aaa agc caa gcc cgg aaa gaa aag gct ttc cat gac gag cat | | | | 1200 |
| Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ala Phe His Asp Glu His | | | | |
| | 385 | 390 | 395 | 400 |

| | |
|---|------|
| ttt ggc ccc ttc ttc cga acc aac cag att ttt gtg aca gct aag aac Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Lys Asn 405 410 415 | 1248 |
| agg tcc agc tac aag tac gac tcc ctg ctg cta ggg ccc aag aac ttc Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe 420 425 430 | 1296 |
| agt ggg atc cta tcc ctg gac ttg ctg cag gag ctg ttg gag cta cag Ser Gly Ile Leu Ser Leu Asp Leu Leu Gln Glu Leu Leu Glu Leu Gln 435 440 445 | 1344 |
| gag aga ctt cga cac ctg caa gtg tgg tcc cat gag gca cag cgc aac Glu Arg Leu Arg His Leu Gln Val Trp Ser His Glu Ala Gln Arg Asn 450 455 460 | 1392 |
| atc tcc ctc cag gac atc tgc tat gct ccc ctc aac ccg cat aac acc Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr 465 470 475 480 | 1440 |
| agc ctc act gac tgc tgt gtc aac agc ctc ctt caa tac ttc cag aac Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn 485 490 495 | 1488 |
| aac cac aca ctc ctg ctg ctc aca gcc aat cag act ctg aat ggc cag Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln 500 505 510 | 1536 |
| acc tcc ctg gtg gac tgg aag gac cat ttc ctc tac tgt gcc aat gcc Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala 515 520 525 | 1584 |
| cct ctc acg tac aaa gat ggc aca gcc ctg gcc ctg agc tgc ata gct Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala 530 535 540 | 1632 |
| gac tac ggg gca cct gtc ttc ccc ttc ctt gct gtt ggg ggc tac caa Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln 545 550 555 560 | 1680 |
| ggg acg gac tac tcg gag gca gaa gcc ctg atc ata acc ttc tct atc Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile 565 570 575 | 1728 |
| aat aac tac ccc gct gat gat ccc cgc atg gcc cac gcc aag ctc tgg Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala His Ala Lys Leu Trp 580 585 590 | 1776 |
| gag gag gct ttc ttg aag gaa atg caa tcc ttc cag aga agc aca gct Glu Glu Ala Phe Leu Lys Glu Met Gln Ser Phe Gln Arg Ser Thr Ala 595 600 605 | 1824 |
| gac aag ttc cag att gcg ttc tca gct gag cgt tct ctg gag gac gag Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu 610 615 620 | 1872 |
| atc aat cgc act acc atc cag gac ctg cct gtc ttt gcc atc agc tac Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr 625 630 635 640 | 1920 |

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| ctt atc gtc ttc ctg tac atc tcc ctg gcc ctg ggc agc tac tcc aga Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg 645 650 655 | 1968 |
| tgg agc cga gtt gcg gtg gat tcc aag gct act ctg ggc cta ggt ggg Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly 660 665 670 | 2016 |
| gtg gct gtt gtg ctg gga gca gtc gtc gct gcc atg ggc ttc tac tcc Val Ala Val Val Leu Gly Ala Val Val Ala Ala Met Gly Phe Tyr Ser 675 680 685 | 2064 |
| tac ctg ggt gtc ccc tcc tct ctg gtc atc att caa gtg gta cct ttc Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe 690 695 700 | 2112 |
| ctg gtg ctg gct gtg gga gct gac aac atc ttc atc ttt gtt ctt gag Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu 705 710 715 720 | 2160 |
| tac cag agg ctg cct agg atg ccc ggg gag cag cga gag gct cac att Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile 725 730 735 | 2208 |
| ggc cgc acc ctg ggt agt gtg gcc ccc agc atg ctg ctg tgc agc ctc Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu 740 745 750 | 2256 |
| tct gag gcc atc tgc ttc ttt cta ggg gcc ctg acc tcc atg cca gct Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Ser Met Pro Ala 755 760 765 | 2304 |
| gtg agg acc ttt gcc ttg acc tct ggc tta gca atc atc ttt gac ttc Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe 770 775 780 | 2352 |
| ctg ctc cag atg aca gcc ttt gtg gcc ctg ctc tcc ctg gat agc aag Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys 785 790 795 800 | 2400 |
| agg cag gag gcc tct cgc ccc gac gtc gtg tgc tgc ttt tca agc cga Arg Gln Glu Ala Ser Arg Pro Asp Val Val Cys Cys Phe Ser Ser Arg 805 810 815 | 2448 |
| aat ctg ccc cca ccg aaa caa aaa gaa ggc ctc tta ctt tgc ttc ttc Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe 820 825 830 | 2496 |
| cgc aag ata tac act ccc ttc ctg ctg cac aga ttc atc cgc cct gtt Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val 835 840 845 | 2544 |
| gtg ctg ctg ctc ttt ctg gtc ctg ttt gga gca aac ctc tac tta atg Val Leu Leu Leu Phe Leu Val Leu Phe Gly Ala Asn Leu Tyr Leu Met 850 855 860 | 2592 |
| tgc aac atc agc gtg ggg ctg gac cag gat ctg gct ctg ccc aag gat Cys Asn Ile Ser Val Gly Leu Asp Gln Asp Leu Ala Leu Pro Lys Asp 865 870 875 880 | 2640 |
| tcc tac ctg ata gac tac ttc ctc ttt ctg aac cgg tac ttg gaa gtg | 2688 |

| | |
|---|------|
| Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val | |
| 885 890 895 | |
| ggg cct cca gtg tac ttt gac acc acc tca ggc tac aac ttt tcc acc | 2736 |
| Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr | |
| 900 905 910 | |
| gag gca ggc atg aac gcc att tgc tct agt gca ggc tgt gag agc ttc | 2784 |
| Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe | |
| 915 920 925 | |
| tcc cta acc cag aaa atc cag tat gcc agt gaa ttc cct aat cag tct | 2832 |
| Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser | |
| 930 935 940 | |
| tat gtg gct att gct gca tcc tcc tgg gta gat gac ttc atc gac tgg | 2880 |
| Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp | |
| 945 950 955 960 | |
| ctg acc cca tcc tcc tcc tgc tgc cgc att tat acc cgt ggc ccc cat | 2928 |
| Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His | |
| 965 970 975 | |
| aaa gat gag ttc tgt ccc tca acg gat act tcc ttc aac tgt ctc aaa | 2976 |
| Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys | |
| 980 985 990 | |
| aac tgc atg aac cgc act ctg ggt ccc gtg aga ccc aca aca gaa cag | 3024 |
| Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Thr Glu Gln | |
| 995 1000 1005 | |
| ttt cat aag tac ctg ccc tgg ttc ctg aat gat acg ccc aac atc | 3069 |
| Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Thr Pro Asn Ile | |
| 1010 1015 1020 | |
| aga tgt cct aaa ggg ggc cta gca gcg tat aga acc tct gtg aat | 3114 |
| Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn | |
| 1025 1030 1035 | |
| ttg agc tca gat ggc cag att ata gcc tcc cag ttc atg gcc tac | 3159 |
| Leu Ser Ser Asp Gly Gln Ile Ile Ala Ser Gln Phe Met Ala Tyr | |
| 1040 1045 1050 | |
| cac aag ccc tta cgg aac tca cag gac ttt aca gaa gct ctc cgg | 3204 |
| His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg | |
| 1055 1060 1065 | |
| gca tcc cgg ttg cta gca gcc aac atc aca gct gaa cta cgg aag | 3249 |
| Ala Ser Arg Leu Leu Ala Ala Asn Ile Thr Ala Glu Leu Arg Lys | |
| 1070 1075 1080 | |
| gtg cct ggg aca gat ccc aac ttt gag gtc ttc cct tac acg atc | 3294 |
| Val Pro Gly Thr Asp Pro Asn Phe Glu Val Phe Pro Tyr Thr Ile | |
| 1085 1090 1095 | |
| tcc aat gtg ttc tac cag caa tac ctg acg gtt ctc cct gag gga | 3339 |
| Ser Asn Val Phe Tyr Gln Gln Tyr Leu Thr Val Leu Pro Glu Gly | |
| 1100 1105 1110 | |
| atc ttc act ctt gct ctc tgc ttc gtg ccc acc ttt gtg gtc tgc | 3384 |
| Ile Phe Thr Leu Ala Leu Cys Phe Val Pro Thr Phe Val Val Cys | |

| 1115 | 1120 | 1125 | |
|-----------------------------|---------------------|-------------|------|
| tac ctc cta ctg ggc ctg gac | ata cgc tca ggc atc | ctc aac ctg | 3429 |
| Tyr Leu Leu Leu Gly Leu Asp | Ile Arg Ser Gly Ile | Leu Asn Leu | |
| 1130 | 1135 | 1140 | |
| ctc tcc atc att atg atc ctc | gtg gac acc atc ggc | ctc atg gct | 3474 |
| Leu Ser Ile Ile Met Ile Leu | Val Asp Thr Ile Gly | Leu Met Ala | |
| 1145 | 1150 | 1155 | |
| gtg tgg ggt atc agc tac aat | gct gtg tcc ctc atc | aac ctt gtc | 3519 |
| Val Trp Gly Ile Ser Tyr Asn | Ala Val Ser Leu Ile | Asn Leu Val | |
| 1160 | 1165 | 1170 | |
| acg gca gtg ggc atg tct gtg | gag ttc gtg tcc cac | att acc cgg | 3564 |
| Thr Ala Val Gly Met Ser Val | Glu Phe Val Ser His | Ile Thr Arg | |
| 1175 | 1180 | 1185 | |
| tcc ttt gct gta agc acc aag | cct acc cgg ctg gag | aga gcc aaa | 3609 |
| Ser Phe Ala Val Ser Thr Lys | Pro Thr Arg Leu Glu | Arg Ala Lys | |
| 1190 | 1195 | 1200 | |
| gat gct act atc ttc atg ggc | agt gcg gtg ttt gct | gga gtg gcc | 3654 |
| Asp Ala Thr Ile Phe Met Gly | Ser Ala Val Phe Ala | Gly Val Ala | |
| 1205 | 1210 | 1215 | |
| atg acc aac ttc ccg ggc atc | ctc atc ctg ggc ttt | gct cag gcc | 3699 |
| Met Thr Asn Phe Pro Gly Ile | Leu Ile Leu Gly Phe | Ala Gln Ala | |
| 1220 | 1225 | 1230 | |
| cag ctt atc cag att ttc ttc | ttc cgc ctc aac ctc | ctg atc acc | 3744 |
| Gln Leu Ile Gln Ile Phe Phe | Phe Arg Leu Asn Leu | Leu Ile Thr | |
| 1235 | 1240 | 1245 | |
| ttg ctg ggt ctg cta cac ggc | ctg gtc ttc ctg ccc | gtt gtc ctc | 3789 |
| Leu Leu Gly Leu Leu His Gly | Leu Val Phe Leu Pro | Val Val Leu | |
| 1250 | 1255 | 1260 | |
| agc tat ctg ggg cca gat gtt | aac caa gct ctg gta | ctg gag gag | 3834 |
| Ser Tyr Leu Gly Pro Asp Val | Asn Gln Ala Leu Val | Leu Glu Glu | |
| 1265 | 1270 | 1275 | |
| aaa cta gcc act gag gca gcc | atg gtc tca gag cct | tct tgc cca | 3879 |
| Lys Leu Ala Thr Glu Ala Ala | Met Val Ser Glu Pro | Ser Cys Pro | |
| 1280 | 1285 | 1290 | |
| cag tac ccc ttc ccg gct gat | gca aac acc agt gac | tat gtt aac | 3924 |
| Gln Tyr Pro Phe Pro Ala Asp | Ala Asn Thr Ser Asp | Tyr Val Asn | |
| 1295 | 1300 | 1305 | |
| tac ggc ttt aat cca gaa ttt | atc cct gaa att aat | gct gct agc | 3969 |
| Tyr Gly Phe Asn Pro Glu Phe | Ile Pro Glu Ile Asn | Ala Ala Ser | |
| 1310 | 1315 | 1320 | |
| agc tct ctg ccc aaa agt gac | caa aag ttc taa | | 4002 |
| Ser Ser Leu Pro Lys Ser Asp | Gln Lys Phe | | |
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Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu
35 40 45

Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His
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Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu
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Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu
85 90 95

Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
100 105 110

Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr
115 120 125

Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln
130 135 140

Arg Asp Pro Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
145 150 155 160

Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg
165 170 175

Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr
180 185 190

Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
195 200 205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
 210 215 220
 Pro Gly Gln Ala Leu Ala Asp Gly Met Lys Pro Leu Asp Gly Lys Ile
 225 230 235 240
 Thr Pro Cys Asn Glu Ser Gln Gly Glu Asp Ser Ala Ala Cys Ser Cys
 245 250 255
 Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Pro Ala Leu
 260 265 270
 Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile
 275 280 285
 Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Val Val Leu Val Tyr
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 Leu Arg Val Ala Ser Asn Arg Asn Lys Asn Lys Thr Ala Gly Ser Gln
 305 310 315 320
 Glu Ala Pro Asn Leu Pro Arg Lys Arg Arg Phe Ser Pro His Thr Val
 325 330 335
 Leu Gly Arg Phe Phe Glu Ser Trp Gly Thr Arg Val Ala Ser Trp Pro
 340 345 350
 Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ser Val
 355 360 365
 Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
 370 375 380
 Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ala Phe His Asp Glu His
 385 390 395 400
 Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Lys Asn
 405 410 415
 Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe
 420 425 430
 Ser Gly Ile Leu Ser Leu Asp Leu Leu Gln Glu Leu Leu Glu Leu Gln
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Glu Arg Leu Arg His Leu Gln Val Trp Ser His Glu Ala Gln Arg Asn
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Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr
 465 470 475 480

Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn
 485 490 495

Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln
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Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
 515 520 525

Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala
 530 535 540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln
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Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile
 565 570 575

Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala His Ala Lys Leu Trp
 580 585 590

Glu Glu Ala Phe Leu Lys Glu Met Gln Ser Phe Gln Arg Ser Thr Ala
 595 600 605

Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu
 610 615 620

Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr
 625 630 635 640

Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg
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Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
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Val Ala Val Val Leu Gly Ala Val Val Ala Ala Met Gly Phe Tyr Ser
 675 680 685

Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe

| 690 | 695 | 700 |
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| Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile 725 730 735 | | |
| Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu 740 745 750 | | |
| Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Ser Met Pro Ala 755 760 765 | | |
| Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe 770 775 780 | | |
| Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys 785 790 795 800 | | |
| Arg Gln Glu Ala Ser Arg Pro Asp Val Val Cys Cys Phe Ser Ser Arg 805 810 815 | | |
| Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe 820 825 830 | | |
| Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val 835 840 845 | | |
| Val Leu Leu Leu Phe Leu Val Leu Phe Gly Ala Asn Leu Tyr Leu Met 850 855 860 | | |
| Cys Asn Ile Ser Val Gly Leu Asp Gln Asp Leu Ala Leu Pro Lys Asp 865 870 875 880 | | |
| Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val 885 890 895 | | |
| Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr 900 905 910 | | |
| Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe 915 920 925 | | |
| Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser 930 935 940 | | |

Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
 945 950 955 960

Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His
 965 970 975

Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys
 980 985 990

Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Thr Glu Gln
 995 1000 1005

Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Thr Pro Asn Ile
 1010 1015 1020

Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn
 1025 1030 1035

Leu Ser Ser Asp Gly Gln Ile Ile Ala Ser Gln Phe Met Ala Tyr
 1040 1045 1050

His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg
 1055 1060 1065

Ala Ser Arg Leu Leu Ala Ala Asn Ile Thr Ala Glu Leu Arg Lys
 1070 1075 1080

Val Pro Gly Thr Asp Pro Asn Phe Glu Val Phe Pro Tyr Thr Ile
 1085 1090 1095

Ser Asn Val Phe Tyr Gln Gln Tyr Leu Thr Val Leu Pro Glu Gly
 1100 1105 1110

Ile Phe Thr Leu Ala Leu Cys Phe Val Pro Thr Phe Val Val Cys
 1115 1120 1125

Tyr Leu Leu Leu Gly Leu Asp Ile Arg Ser Gly Ile Leu Asn Leu
 1130 1135 1140

Leu Ser Ile Ile Met Ile Leu Val Asp Thr Ile Gly Leu Met Ala
 1145 1150 1155

Val Trp Gly Ile Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val
 1160 1165 1170

Thr Ala Val Gly Met Ser Val Glu Phe Val Ser His Ile Thr Arg
 1175 1180 1185

Ser Phe Ala Val Ser Thr Lys Pro Thr Arg Leu Glu Arg Ala Lys
 1190 1195 1200

Asp Ala Thr Ile Phe Met Gly Ser Ala Val Phe Ala Gly Val Ala
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Met Thr Asn Phe Pro Gly Ile Leu Ile Leu Gly Phe Ala Gln Ala
 1220 1225 1230

Gln Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr
 1235 1240 1245

Leu Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Val Leu
 1250 1255 1260

Ser Tyr Leu Gly Pro Asp Val Asn Gln Ala Leu Val Leu Glu Glu
 1265 1270 1275

Lys Leu Ala Thr Glu Ala Ala Met Val Ser Glu Pro Ser Cys Pro
 1280 1285 1290

Gln Tyr Pro Phe Pro Ala Asp Ala Asn Thr Ser Asp Tyr Val Asn
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Tyr Gly Phe Asn Pro Glu Phe Ile Pro Glu Ile Asn Ala Ala Ser
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Ser Ser Leu Pro Lys Ser Asp Gln Lys Phe
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| | | | | | | |
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| wsnwsnytnw | snathacnaa | rgcnytnytn | acnmngtgyc | cngcntgyws | ngaraaytty | 360 |
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| gcnwsntgyc | cngtnathcc | nccncncnc | gcnytnmgnc | cnwsnttyta | yatgggnmg | 840 |
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| gtnytngtnt | ayytnmgnt | ngcnwsnaay | mgnaayaara | ayaaracng | nggnwsncar | 960 |
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| athgtngtna | thgcnytnws | ngtnggnytn | acnttyathg | arytnacnac | ngayccngtn | 1140 |
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| tyggncnt | tyttymgnac | naaycarath | tygtnacng | cnaaraaymg | nwsnwsntay | 1260 |
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| gcncarmgna | ayathwsnyt | ncargayath | tgytaygcnc | cnytnaaycc | ncayaayacn | 1440 |
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| | | | | | | |
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| gtngtnccnt | tyytngtnyt | ngcngtnggn | gengayaaya | thttyathtt | ygtnytngar | 2160 |
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| ccnaayathm | gntgyccnaa | rgnggnytn | gcngcntaym | gnacnwsngt | naayytnwsn | 3120 |
| wsngayggnc | arathathgc | nwsncartty | atggcntayc | ayaarccnyt | nmgnaaywsn | 3180 |
| cargayttya | cngargcnyt | nmngncnwsn | mgnytnytn | cngcnaayat | hacngcngar | 3240 |
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| gtnttytayc | arcartayyt | nacngtnytn | ccngarggna | thttyacnyt | ngcnytnngy | 3360 |
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| mgngcnaarg | aygcnacnat | httyatgggn | wsngcngtnt | tygcnggngt | ngcnatgacn | 3660 |
| aayttyccng | gnathytnat | hytnngntty | gcncargcnc | arytnathca | rathttytty | 3720 |

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| gcnacngarg cngcnatggt nwsngarccn wsntgyccnc artayccntt yccngcngay | 3900 |
| gcnaayacnw sngaytaygt naaytayggn ttyaayccng arttyathcc ngarathaay | 3960 |
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Ile Arg Cys

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| Glu | Ala | Phe | Tyr | Gln | Arg | Ser | Phe | Ala | Glu | Lys | Ala | Tyr | Glu | Ser | Cys |
| 1 | | | | 5 | | | | | 10 | | | | | 15 | |

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Cys Ala Asn Ala Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu


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1                5                10                15

Ser

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<213>  Homo sapiens

<220>

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Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu Arg
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ttg gcc cag agt gag cct tac aca acc atc cac cag cct ggc tac tgc      155
Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr Cys
                20                25                30

gcc ttc tat gac gaa tgt ggg aag aac cca gag ctg tct gga agc ctc      203
Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser Leu
                35                40                45

atg aca ctc tcc aac gtg tcc tgc ctg tcc aac acg ccg gcc cgc aag      251
Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg Lys
50                55                60                65

atc aca ggt gat cac ctg atc cta tta cag aag atc tgc ccc cgc ctc      299
Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg Leu
                    70                75                80

tac acc ggc ccc aac acc caa gcc tgc tgc tcc gcc aag cag ctg gta      347
Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu Val
                    85                90                95

tca ctg gaa gcg agt ctg tcg atc acc aag gcc ctc ctc acc cgc tgc      395
Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg Cys
                100                105                110

cca gcc tgc tct gac aat ttt gtg aac ctg cac tgc cac aac acg tgc      443
Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr Cys
                115                120                125

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| | |
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| agc ccc aat cag agc ctc ttc atc aat gtg acc cgc gtg gcc cag cta Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln Leu 130 135 140 145 | 491 |
| ggg gct gga caa ctc cca gct gtg gtg gcc tat gag gcc ttc tac cag Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr Gln 150 155 160 | 539 |
| cat agc ttt gcc gag cag agc tat gac tcc tgc agc cgt gtg cgc gtc His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg Val 165 170 175 | 587 |
| cct gca gct gcc acg ctg gct gtg ggc acc atg tgt ggc gtg tat ggc Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr Gly 180 185 190 | 635 |
| tct gcc ctt tgc aat gcc cag cgc tgg ctc aac ttc cag gga gac aca Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp Thr 195 200 205 | 683 |
| ggc aat ggt ctg gcc cca ctg gac atc acc ttc cac ctc ttg gag cct Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu Pro 210 215 220 225 | 731 |
| ggc cag gcc gtg ggg agt ggg att cag cct ctg aat gag ggg gtt gca Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val Ala 230 235 240 | 779 |
| cgt tgc aat gag tcc caa ggt gac gac gtg gcg acc tgc tcc tgc caa Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys Gln 245 250 255 | 827 |
| gac tgt gct gca tcc tgt cct gcc ata gcc cgc ccc cag gcc ctc gac Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu Asp 260 265 270 | 875 |
| tcc acc ttc tac ctg ggc cag atg ccg ggc agt ctg gtc ctc atc atc Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile Ile 275 280 285 | 923 |
| atc ctc tgc tct gtc ttc gct gtg gtc acc atc ctg ctt gtg gga ttc Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly Phe 290 295 300 305 | 971 |
| cgt gtg gcc ccc gcc agg gac aaa agc aag atg gtg gac ccc aag aag Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys Lys 310 315 320 | 1019 |
| ggc acc agc ctc tct gac aag ctc agc ttc tcc acc cac acc ctc ctt Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu Leu 325 330 335 | 1067 |
| ggc cag ttc ttc cag ggc tgg ggc acg tgg gtg gct tcg tgg cct ctg Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro Leu 340 345 350 | 1115 |
| acc atc ttg gtg cta tct gtc atc ccg gtg gtg gcc ttg gca gcg ggc Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala Gly 355 360 365 | 1163 |

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| ctg gtc ttt aca gaa ctc act acg gac ccc gtg gag ctg tgg tcg gcc Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser Ala 370 375 380 385 | 1211 |
| ccc aac agc caa gcc cgg agt gag aaa gct ttc cat gac cag cat ttc Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His Phe 390 395 400 | 1259 |
| ggc ccc ttc ttc cga acc aac cag gtg atc ctg acg gct cct aac cgg Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn Arg 405 410 415 | 1307 |
| tcc agc tac agg tat gac tct ctg ctg ctg ggg ccc aag aac ttc agc Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe Ser 420 425 430 | 1355 |
| gga atc ctg gac ctg gac ttg ctg ctg gag ctg cta gag ctg cag gag Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln Glu 435 440 445 | 1403 |
| agg ctg cgg cac ctc cag gta tgg tcg ccc gaa gca cag cgc aac atc Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn Ile 450 455 460 465 | 1451 |
| tcc ctg cag gac atc tgc tac gcc ccc ctc aat ccg gac aat acc agt Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr Ser 470 475 480 | 1499 |
| ctc tac gac tgc tgc atc aac agc ctc ctg cag tat ttc cag aac aac Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn Asn 485 490 495 | 1547 |
| cgc acg ctc ctg ctg ctc aca gcc aac cag aca ctg atg ggg cag acc Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln Thr 500 505 510 | 1595 |
| tcc caa gtc gac tgg aag gac cat ttt ctg tac tgt gcc aat gcc ccg Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala Pro 515 520 525 | 1643 |
| ctc acc ttc aag gat ggc aca gcc ctg gcc ctg agc tgc atg gct gac Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala Asp 530 535 540 545 | 1691 |
| tac ggg gcc cct gtc ttc ccc ttc ctt gcc att ggg ggg tac aaa gga Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys Gly 550 555 560 | 1739 |
| aag gac tat tct gag gca gag gcc ctg atc atg acg ttc tcc ctc aac Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu Asn 565 570 575 | 1787 |
| aat tac cct gcc ggg gac ccc cgt ctg gcc cag gcc aag ctg tgg gag Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp Glu 580 585 590 | 1835 |
| gag gcc ttc tta gag gaa atg cga gcc ttc cag cgt cgg atg gct ggc Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala Gly 595 600 605 | 1883 |
| atg ttc cag gtc acg ttc atg gct gag cgc tct ctg gaa gac gag atc | 1931 |

| | |
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| Met Phe Gln Val Thr Phe Met Ala Glu Arg Ser Leu Glu Asp Glu Ile 610 615 620 625 | |
| aat cgc acc aca gct gaa gac ctg ccc atc ttt gcc acc agc tac att Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr Ile 630 635 640 | 1979 |
| gtc ata ttc ctg tac atc tct ctg gcc ctg ggc agc tat tcc agc tgg Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser Trp 645 650 655 | 2027 |
| agc cga gtg atg gtg gac tcc aag gcc acg ctg ggc ctc ggc ggg gtg Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly Val 660 665 670 | 2075 |
| gcc gtg gtc ctg gga gca gtc atg gct gcc atg ggc ttc ttc tcc tac Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser Tyr 675 680 685 | 2123 |
| ttg ggt atc cgc tcc tcc ctg gtc atc ctg caa gtg gtt cct ttc ctg Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe Leu 690 695 700 705 | 2171 |
| gtg ctg tcc gtg ggg gct gat aac atc ttc atc ttt gtt ctc gag tac Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu Tyr 710 715 720 | 2219 |
| cag agg ctg ccc cgg agg cct ggg gag cca cga gag gtc cac att ggg Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile Gly 725 730 735 | 2267 |
| cga gcc cta ggc agg gtg gct ccc agc atg ctg ttg tgc agc ctc tct Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu Ser 740 745 750 | 2315 |
| gag gcc atc tgc ttc ttc cta ggg gcc ctg acc ccc atg cca gct gtg Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala Val 755 760 765 | 2363 |
| cgg acc ttt gcc ctg acc tct ggc ctt gca gtg atc ctt gac ttc ctc Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe Leu 770 775 780 785 | 2411 |
| ctg cag atg tca gcc ttt gtg gcc ctg ctc tcc ctg gac agc aag agg Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys Arg 790 795 800 | 2459 |
| cag gag gcc tcc cgg ttg gac gtc tgc tgc tgt gtc aag ccc cag gag Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln Glu 805 810 815 | 2507 |
| ctg ccc ccg cct ggc cag gga gag ggg ctc ctg ctt ggc ttc ttc caa Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe Gln 820 825 830 | 2555 |
| aag gct tat gcc ccc ttc ctg ctg cac tgg atc act cga ggt gtt gtg Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val Val 835 840 845 | 2603 |
| ctg ctg ctg ttt ctc gcc ctg ttc gga gtg agc ctc tac tcc atg tgc Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met Cys 850 855 860 | 2651 |

| 850 | 855 | 860 | 865 | |
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| cac atc agc gtg gga ctg gac cag gag ctg gcc ctg ccc aag gac tcg | | | | 2699 |
| His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp Ser | 870 | 875 | 880 | |
| tac ctg ctt gac tat ttc ctc ttt ctg aac cgc tac ttc gag gtg ggg | | | | 2747 |
| Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val Gly | 885 | 890 | 895 | |
| gcc ccg gtg tac ttt gtt acc acc ttg ggc tac aac ttc tcc agc gag | | | | 2795 |
| Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser Glu | 900 | 905 | 910 | |
| gct ggg atg aat gcc atc tgc tcc agt gca ggc tgc aac aac ttc tcc | | | | 2843 |
| Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe Ser | 915 | 920 | 925 | |
| ttc acc cag aag atc cag tat gcc aca gag ttc cct gag cag tct tac | | | | 2891 |
| Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser Tyr | 930 | 935 | 940 | 945 |
| ctg gcc atc cct gcc tcc tcc tgg gtg gat gac ttc att gac tgg ctg | | | | 2939 |
| Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp Leu | 950 | 955 | 960 | |
| acc ccg tcc tcc tgc tgc cgc ctt tat ata tct ggc ccc aat aag gac | | | | 2987 |
| Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys Asp | 965 | 970 | 975 | |
| aag ttc tgc ccc tgc acc gtc aac tct ctg aac tgc cta aag aac tgc | | | | 3035 |
| Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn Cys | 980 | 985 | 990 | |
| atg agc atc acg atg ggc tct gtg agg ccc tgc gtg gag cag ttc cat | | | | 3083 |
| Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe His | 995 | 1000 | 1005 | |
| aag tat ctt ccc tgg ttc ctg aac gac cgg ccc aac atc aaa tgt | | | | 3128 |
| Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys Cys | 1010 | 1015 | 1020 | |
| ccc aaa ggc ggc ctg gca gca tac agc acc tct gtg aac ttg act | | | | 3173 |
| Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu Thr | 1025 | 1030 | 1035 | |
| tca gat ggc cag gtt tta gac aca gtt gcc att ctg tca ccc agg | | | | 3218 |
| Ser Asp Gly Gln Val Leu Asp Thr Val Ala Ile Leu Ser Pro Arg | 1040 | 1045 | 1050 | |
| ctg gag tac agt ggc aca atc tcg gct cac tgc aac ctc tac ctc | | | | 3263 |
| Leu Glu Tyr Ser Gly Thr Ile Ser Ala His Cys Asn Leu Tyr Leu | 1055 | 1060 | 1065 | |
| ctg gat tca gcc tcc agg ttc atg gcc tat cac aag ccc ctg aaa | | | | 3308 |
| Leu Asp Ser Ala Ser Arg Phe Met Ala Tyr His Lys Pro Leu Lys | 1070 | 1075 | 1080 | |
| aac tca cag gat tac aca gaa gct ctg cgg gca gct cga gag ctg | | | | 3353 |
| Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala Ala Arg Glu Leu | 1085 | 1090 | 1095 | |

| | | | | | | | | | | | | | | | |
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| ccg Pro 1115 | gct Ala | ttt Phe | gag Glu | gtc Val | ttc Phe 1120 | ccc Pro | tac Tyr | acg Thr | atc Ile | acc Thr 1125 | aat Asn | gtg Val | ttt Phe | tat Tyr | 3443 |
| gag Glu 1130 | cag Gln | tac Tyr | ctg Leu | acc Thr | atc Ile 1135 | ctc Leu | cct Pro | gag Glu | ggg Gly | ctc Leu 1140 | ttc Phe | atg Met | ctc Leu | agc Ser | 3488 |
| ctc Leu 1145 | tgc Cys | ctt Leu | gtg Val | ccc Pro | acc Thr 1150 | ttc Phe | gct Ala | gtc Val | tcc Ser | tgc Cys 1155 | ctc Leu | ctg Leu | ctg Leu | ggc Gly | 3533 |
| ctg Leu 1160 | gac Asp | ctg Leu | cgc Arg | tcc Ser | ggc Gly 1165 | ctc Leu | ctc Leu | aac Asn | ctg Leu | ctc Leu 1170 | tcc Ser | att Ile | gtc Val | atg Met | 3578 |
| atc Ile 1175 | ctc Leu | gtg Val | gac Asp | act Thr | gtc Val 1180 | ggc Gly | ttc Phe | atg Met | gcc Ala | ctg Leu 1185 | tgg Trp | ggc Gly | atc Ile | agt Ser | 3623 |
| tac Tyr 1190 | aat Asn | gct Ala | gtg Val | tcc Ser | ctc Leu 1195 | atc Ile | aac Asn | ctg Leu | gtc Val | tgc Ser 1200 | gcg Ala | gtg Val | ggc Gly | atg Met | 3668 |
| tct Ser 1205 | gtg Val | gag Glu | ttt Phe | gtg Val | tcc Ser 1210 | cac His | att Ile | acc Thr | cgc Arg | tcc Ser 1215 | ttt Phe | gcc Ala | atc Ile | agc Ser | 3713 |
| acc Thr 1220 | aag Lys | ccc Pro | acc Thr | tgg Trp | ctg Leu 1225 | gag Glu | agg Arg | gcc Ala | aaa Lys | gag Glu 1230 | gcc Ala | acc Thr | atc Ile | tct Ser | 3758 |
| atg Met 1235 | gga Gly | agt Ser | gcg Ala | gtg Val | ttt Phe 1240 | gca Ala | ggg Gly | gtg Val | gcc Ala | atg Met 1245 | acc Thr | aac Asn | ctg Leu | cct Pro | 3803 |
| ggc Gly 1250 | atc Ile | ctt Leu | gtc Val | ctg Leu | ggc Gly 1255 | ctc Leu | gcc Ala | aag Lys | gcc Ala | cag Gln 1260 | ctc Leu | att Ile | cag Gln | atc Ile | 3848 |
| ttc Phe 1265 | ttc Phe | ttc Phe | cgc Arg | ctc Leu | aac Asn 1270 | ctc Leu | ctg Leu | atc Ile | act Thr | ctg Leu 1275 | ctg Leu | ggc Gly | ctg Leu | ctg Leu | 3893 |
| cat His 1280 | ggc Gly | ttg Leu | gtc Val | ttc Phe | ctg Leu 1285 | ccc Pro | gtc Val | atc Ile | ctc Leu | agc Ser 1290 | tac Tyr | gtg Val | ggg Gly | cct Pro | 3938 |
| gac Asp 1295 | gtt Val | aac Asn | ccg Pro | gct Ala | ctg Leu 1300 | gca Ala | ctg Leu | gag Glu | cag Gln | aag Lys 1305 | cgg Arg | gct Ala | gag Glu | gag Glu | 3983 |
| gcg Ala 1310 | gtg Val | gca Ala | gca Ala | gtc Val | atg Met 1315 | gtg Val | gcc Ala | tct Ser | tgc Cys | cca Pro 1320 | aat Asn | cac His | ccc Pro | tcc Ser | 4028 |

| | |
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| Arg Val Ser Thr Ala Asp Asn Ile Tyr Val Asn His Ser Phe Glu | |
| 1325 1330 1335 | |
| | |
| ggg tct atc aaa ggt gct ggt gcc atc agc aac ttc ttg ccc aac | 4118 |
| Gly Ser Ile Lys Gly Ala Gly Ala Ile Ser Asn Phe Leu Pro Asn | |
| 1340 1345 1350 | |
| | |
| aat ggg cgg cag ttc tga tacagccaga ggccctgtct aggctctatg | 4166 |
| Asn Gly Arg Gln Phe | |
| 1355 | |
| | |
| ggcctgaacc aaaggggttat ggggatcttc cttgtgactg ccccttgaca cacgccctcc | 4226 |
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| tgaggatatcc aggcagcacc actgatggct cctctgctcc catagtgggt cccagtttc | 4346 |
| caagtcacct aggccttggg cagtgcctcc tcctgggcct gggctctggaa gttggcagga | 4406 |
| acagacacac tccatgtttg tcccacactc actcactttc ctaggagccc acttctcatc | 4466 |
| caacttttcc cttctcagtt cctctctcga aagtcttaat tctgtgtcag taagtcttta | 4526 |
| acacgtagca gtgtccctga gaacacagac aatgaccact accctgggtg tgatatcaca | 4586 |
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| agggcccagg aaggatgctc tcataaggcc caggaaggat gctctcataa gcaccttggt | 4766 |
| catggattag ccctcctgg aaaatggtgt tgggttttgt ctccagctcc aatacttatt | 4826 |
| aaggctgttg ctgccagtca aggccacca ggagtctgaa ggctgggagc tcttggggct | 4886 |
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| gagcttttgg acagctctcc agaagcatga actgcagtg agatgaagat cctggctctg | 5006 |
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<211> 1359

<212> PRT

<213> Homo sapiens

<400> 44

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| 1 | | | | 5 | | | | 10 | | | | | 15 | | |

Arg Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr
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Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser
 35 40 45

Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg
 50 55 60

Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg
 65 70 75 80

Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu
 85 90 95

Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
 100 105 110

Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr
 115 120 125

Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln
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Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
 145 150 155 160

Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg
 165 170 175

Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr
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Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
 195 200 205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
 210 215 220

Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val
 225 230 235 240

Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys
 245 250 255

Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu

| | | |
|---|-----|-----|
| 260 | 265 | 270 |
| Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile | | |
| 275 | 280 | 285 |
| Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly | | |
| 290 | 295 | 300 |
| Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys | | |
| 305 | 310 | 315 |
| Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu | | |
| 325 | 330 | 335 |
| Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro | | |
| 340 | 345 | 350 |
| Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala | | |
| 355 | 360 | 365 |
| Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser | | |
| 370 | 375 | 380 |
| Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His | | |
| 385 | 390 | 395 |
| Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn | | |
| 405 | 410 | 415 |
| Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe | | |
| 420 | 425 | 430 |
| Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln | | |
| 435 | 440 | 445 |
| Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn | | |
| 450 | 455 | 460 |
| Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr | | |
| 465 | 470 | 475 |
| Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn | | |
| 485 | 490 | 495 |
| Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln | | |
| 500 | 505 | 510 |

| | | | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| Thr | Ser | Gln | Val | Asp | Trp | Lys | Asp | His | Phe | Leu | Tyr | Cys | Ala | Asn | Ala | |
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| Pro | Leu | Thr | Phe | Lys | Asp | Gly | Thr | Ala | Leu | Ala | Leu | Ser | Cys | Met | Ala | |
| | 530 | | | | | 535 | | | | | 540 | | | | | |
| Asp | Tyr | Gly | Ala | Pro | Val | Phe | Pro | Phe | Leu | Ala | Ile | Gly | Gly | Tyr | Lys | |
| 545 | | | | | 550 | | | | | 555 | | | | | 560 | |
| Gly | Lys | Asp | Tyr | Ser | Glu | Ala | Glu | Ala | Leu | Ile | Met | Thr | Phe | Ser | Leu | |
| | | | | 565 | | | | | 570 | | | | | 575 | | |
| Asn | Asn | Tyr | Pro | Ala | Gly | Asp | Pro | Arg | Leu | Ala | Gln | Ala | Lys | Leu | Trp | |
| | | | 580 | | | | | 585 | | | | | 590 | | | |
| Glu | Glu | Ala | Phe | Leu | Glu | Glu | Met | Arg | Ala | Phe | Gln | Arg | Arg | Met | Ala | |
| | | 595 | | | | | 600 | | | | | 605 | | | | |
| Gly | Met | Phe | Gln | Val | Thr | Phe | Met | Ala | Glu | Arg | Ser | Leu | Glu | Asp | Glu | |
| | 610 | | | | | 615 | | | | | 620 | | | | | |
| Ile | Asn | Arg | Thr | Thr | Ala | Glu | Asp | Leu | Pro | Ile | Phe | Ala | Thr | Ser | Tyr | |
| 625 | | | | | 630 | | | | | 635 | | | | | 640 | |
| Ile | Val | Ile | Phe | Leu | Tyr | Ile | Ser | Leu | Ala | Leu | Gly | Ser | Tyr | Ser | Ser | |
| | | | | 645 | | | | | 650 | | | | | 655 | | |
| Trp | Ser | Arg | Val | Met | Val | Asp | Ser | Lys | Ala | Thr | Leu | Gly | Leu | Gly | Gly | |
| | | | 660 | | | | | 665 | | | | | 670 | | | |
| Val | Ala | Val | Val | Leu | Gly | Ala | Val | Met | Ala | Ala | Met | Gly | Phe | Phe | Ser | |
| | | 675 | | | | | 680 | | | | | 685 | | | | |
| Tyr | Leu | Gly | Ile | Arg | Ser | Ser | Leu | Val | Ile | Leu | Gln | Val | Val | Pro | Phe | |
| | 690 | | | | | 695 | | | | | 700 | | | | | |
| Leu | Val | Leu | Ser | Val | Gly | Ala | Asp | Asn | Ile | Phe | Ile | Phe | Val | Leu | Glu | |
| 705 | | | | | 710 | | | | | 715 | | | | 720 | | |
| Tyr | Gln | Arg | Leu | Pro | Arg | Arg | Pro | Gly | Glu | Pro | Arg | Glu | Val | His | Ile | |
| | | | | 725 | | | | | 730 | | | | | 735 | | |
| Gly | Arg | Ala | Leu | Gly | Arg | Val | Ala | Pro | Ser | Met | Leu | Leu | Cys | Ser | Leu | |
| | | | 740 | | | | | 745 | | | | | 750 | | | |

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
 755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe
 770 775 780

Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
 785 790 795 800

Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln
 805 810 815

Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe
 820 825 830

Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val
 835 840 845

Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met
 850 855 860

Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
 865 870 875 880

Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val
 885 890 895

Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser
 900 905 910

Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe
 915 920 925

Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser
 930 935 940

Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
 945 950 955 960

Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys
 965 970 975

Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn
 980 985 990

Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe
 995 1000 1005

His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys
 1010 1015 1020

Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu
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Thr Ser Asp Gly Gln Val Leu Asp Thr Val Ala Ile Leu Ser Pro
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Arg Leu Glu Tyr Ser Gly Thr Ile Ser Ala His Cys Asn Leu Tyr
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Leu Leu Asp Ser Ala Ser Arg Phe Met Ala Tyr His Lys Pro Leu
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Lys Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala Ala Arg Glu
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Leu Ala Ala Asn Ile Thr Ala Asp Leu Arg Lys Val Pro Gly Thr
 1100 1105 1110

Asp Pro Ala Phe Glu Val Phe Pro Tyr Thr Ile Thr Asn Val Phe
 1115 1120 1125

Tyr Glu Gln Tyr Leu Thr Ile Leu Pro Glu Gly Leu Phe Met Leu
 1130 1135 1140

Ser Leu Cys Leu Val Pro Thr Phe Ala Val Ser Cys Leu Leu Leu
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Gly Leu Asp Leu Arg Ser Gly Leu Leu Asn Leu Leu Ser Ile Val
 1160 1165 1170

Met Ile Leu Val Asp Thr Val Gly Phe Met Ala Leu Trp Gly Ile
 1175 1180 1185

Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val Ser Ala Val Gly
 1190 1195 1200

Met Ser Val Glu Phe Val Ser His Ile Thr Arg Ser Phe Ala Ile
 1205 1210 1215

Ser Thr Lys Pro Thr Trp Leu Glu Arg Ala Lys Glu Ala Thr Ile

| | | | | |
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| 1220 | | 1225 | | 1230 |
| Ser Met Gly Ser Ala Val | Phe Ala Gly Val Ala | Met Thr Asn Leu | | |
| 1235 | 1240 | 1245 | | |
| Pro Gly Ile Leu Val Leu | Gly Leu Ala Lys Ala | Gln Leu Ile Gln | | |
| 1250 | 1255 | 1260 | | |
| Ile Phe Phe Phe Arg Leu | Asn Leu Leu Ile Thr | Leu Leu Gly Leu | | |
| 1265 | 1270 | 1275 | | |
| Leu His Gly Leu Val Phe | Leu Pro Val Ile Leu | Ser Tyr Val Gly | | |
| 1280 | 1285 | 1290 | | |
| Pro Asp Val Asn Pro Ala | Leu Ala Leu Glu Gln | Lys Arg Ala Glu | | |
| 1295 | 1300 | 1305 | | |
| Glu Ala Val Ala Ala Val | Met Val Ala Ser Cys | Pro Asn His Pro | | |
| 1310 | 1315 | 1320 | | |
| Ser Arg Val Ser Thr Ala | Asp Asn Ile Tyr Val | Asn His Ser Phe | | |
| 1325 | 1330 | 1335 | | |
| Glu Gly Ser Ile Lys Gly | Ala Gly Ala Ile Ser | Asn Phe Leu Pro | | |
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<212> DNA

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| ttttatgaag agtgtgggaa gaaccagag ctttctggag gcctcacatc actatccaat | 180 |
| atctcctgct tgtctaatac ccagccccg ccatgtcaca ggtgaccacc tggctcttct | 240 |
| ccagcgcgtc tgtccccgcc tatacaatgg cccaatgac acctatgcct gttgctctac | 300 |
| caagcagctg gtgtcattag acagtagcct gtctatcacc aaggccctcc ttacacgctg | 360 |

| | | | | | | |
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| cccgatgc | tctgaaaatt | ttgtgagcat | acactgtcat | aatacctgca | gccctgacca | 420 |
| gagcctcttc | atcaatgtta | ctcgcggtgt | tcagcgggac | cctggacagc | ttcctgctgt | 480 |
| ggtggcctat | gaggcctttt | atcaacgcag | ttttgcagag | aaggcctatg | agtcctgtag | 540 |
| ccgggtgcgc | atccctgcag | ctgcctcgct | ggctgtgggc | agcatgtgtg | gagtgtatgg | 600 |
| ctctgccttc | tgcaatgctc | agcgccctggc | tcaacttcca | aggagacaca | gggaatggcc | 660 |
| tggctccgct | ggacatcacc | ttccacctct | tggagcctgg | ccaggccctg | gcagatggga | 720 |
| tgaagccact | ggatgggaag | atcaaaccct | gcaatgagtc | ccagggtgaa | gactcggcag | 780 |
| cctgttctctg | ccaggactgt | gcagcatcct | gccctgtcat | ccctccgccc | ccggccctgc | 840 |
| gcccttctttt | ctacatgggt | cgaatgccag | gctggctggc | tctcatcatc | atcttctactg | 900 |
| ctgtctttgt | attgctctct | gttgtccttg | tgtatctccg | agtggcttcc | aacaggaaca | 960 |
| agaacaagac | agcaggctcc | caggaagccc | ccaacctccc | tcgtaagcgc | agatttctac | 1020 |
| ctcacactgt | ccttggccgg | ttcttcgaga | gctggggaac | aatgggtggcc | tcatggccac | 1080 |
| tcactgtctt | ggcactgtcc | ttcatagtgt | tgatagcctt | gtcagtaggc | ctgaccttta | 1140 |
| tagaactcac | cacagaccct | gtggaactgt | ggtcggcccc | taaaagccaa | gcccggaaag | 1200 |
| aaaaggcttt | ccatgacgag | cattttggcc | ccttcttccg | aaccaaccag | atttttgtga | 1260 |
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| ctccctcaa | accgcataac | accagcctca | ctgactgctg | tgtcaacagc | ctccttcaat | 1500 |
| acttcagaa | caaccacaca | ctcctgctgc | tcacagccaa | ccagactctg | aatggccaga | 1560 |
| cctccctggt | ggactggaag | gaccatttcc | tctactgtgc | caatgccctt | ctcacgtaca | 1620 |
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| aggaggcttt | cttgaaggaa | atgcaatcct | tccagagaag | cacagctgac | aagttccaga | 1860 |
| ttgcgttctc | agctgagcgt | tctctggagg | acgagatcaa | tcgcactacc | atccaggacc | 1920 |
| tgctgtctt | tgccatcagc | taccttatcg | tcttctctgta | catctccctg | gccctgggca | 1980 |
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| cctcctctct | ggcatcatt | caagtgggtac | ctttcctggt | gctggctgtg | ggagctgaca | 2160 |
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| ccttgacctc | tggcttagca | atcatctttg | acttcctgct | ccagatgaca | gcctttgtgg | 2400 |
| ccctgctctc | cctggatagc | aagaggcagg | aggcctctcg | ccccgacgtc | gtgtgctgct | 2460 |
| tttcaagccg | aatctgccc | ccaccgaaac | aaaaagaagg | cctcttactt | tgcttcttcc | 2520 |
| gcaagatata | cactcccttc | ctgctgcaca | gattcatccg | ccctgttggtg | ctgctgctct | 2580 |
| ttctggctct | gtttggagca | aacctctact | taatgtgcaa | catcagcgtg | gggctggacc | 2640 |
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| aaatccagta | tgccagtga | ttccctaata | agtcttatgt | ggctattgct | gcatcctcct | 2880 |
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| gaatcttcac | tcttgctctc | tgcttcgtgc | ccacctttgt | ggctctgtac | ctcctactgg | 3420 |
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| cacagtaccc | cttcccggct | gatgcaaaca | ccagtgcact | atgttaacta | aggctttaat | 3960 |
| ccagaattta | tccctgaaat | taatgctgct | agcagctctc | tgcccaaaaag | tgaccaaaaag | 4020 |

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| caattaaaaa ggccatggcc tatggcttag gcaggaaata ggggtgtggaa catccaggag | 4320 |
| aagaaaggat tctgggataa aggacacttg ggaacgtgtg gcagtgggtac ctgagcacag | 4380 |
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25

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28

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